Atari ST Resource page 65

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NOVEMBER 1986 VOLUME 5, NUMBER 7

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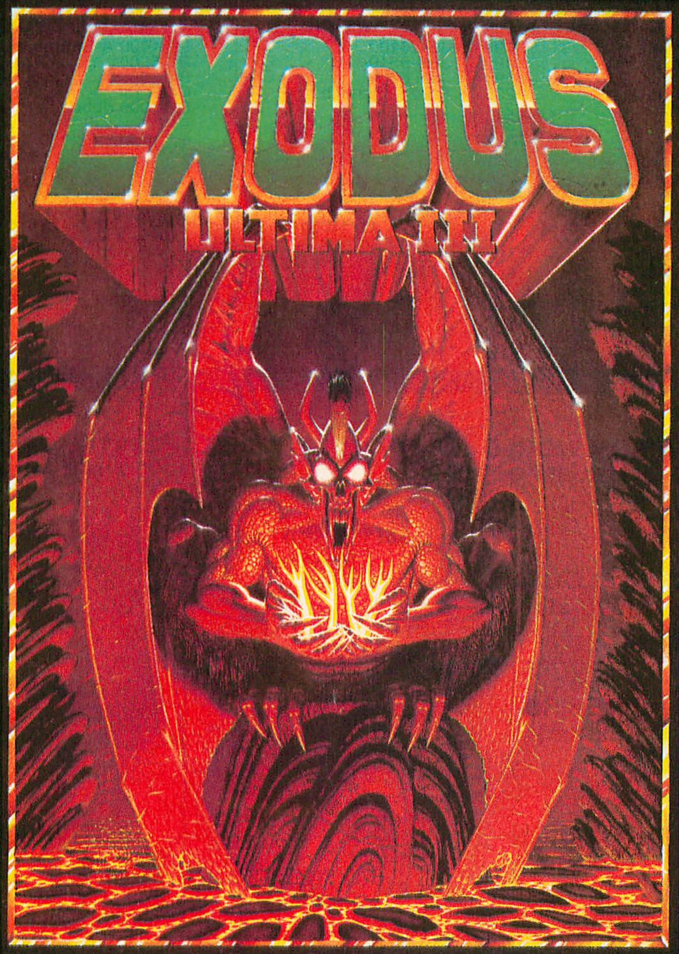
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TYPO ST page 106

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The ATARI® Resource

NOVEMBER 1986, VOLUME 5, NUMBER 7







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Antic
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November 1986, Volume 5, Number 7

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Editorial submissions should include text and program listings on disk and paper. Submissions will be returned if stamped, self-addressed mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material.

TOO MUCH JARGON

While I enjoy my new Atari computer and the company of computer enthusiasts, I'm upset that you enthusiasts perpetuate the poor communication skills which at first gave me and many others a bad impression of computing. I'm one of you now, but thousands like me would be happy to become computer enthusiasts if only you would learn to talk to express, not impress.

Computer enthusiasts make a big mistake by taking familiar words and giving them irrelevant meanings. I'm an engineer—not exactly technologically illiterate—and I still can't see through the jargon.

Well, gotta log off now. My wife powered up the coffee pot, booted up the coffee and it's up and running online. I have to go decoffee my cup and matrix with my peripheral family units. IF U=DONE THEN COFFEE ELSE RETURN: END

D.F. Neff

FASTER FRACTALS

Using the Newell Fast Chip Floating Point ROM and BASIC XL in FAST mode, the longest it takes to run *Fractal Zoom* (**Antic**, April 1986) is six hours—even producing a screen nearly all black. Atari 800 owners using OSS RAMdisk DOS XL with the AXLON board designated as drive 4 need only the following changes in Fractal Zoom:

```
55 RAMDSK=1
1640 IF RAMDSK THEN DAT$(2,2)="4"
```

To increase the speed further would require installing a math co-processor.

Bradley Tompkins
Woodbridge, VA

DIN ALERT

Have you been searching for connectors to build your own ST cables for RGB or composite video, or for television? An Atari-compatible 13-pin DIN connector is available for $7 from Sony. Ask for part number 1-560-946-00. Sony Corp., Sony Drive, Park Ridge, NJ 07656. (201) 930-1000.—ANTIC ED

THERMISTOR & SENSOR

I'm having trouble finding the thermistor and particle sensor needed for the *Weather Wizard* program in the June, 1986 issue of **Antic**.

Ben Drake
Redding, CA

For the thermistor, try Fenwall Electronics, 63 Fountain Street, Framingham, MA 01701. (617) 872-8841. Ask for part number GA45P2. The particle sensor is available from Don Hess, 309 Iowa Avenue, York, NE 68467.— ANTIC ED

PAL VS. NTSC

My 800XL computer and 1050 disk drive come from England, where the voltage supply is 240 volts AC instead of our 120 volt AC. I also have a step-up transformer and have gotten power to the disk drive and computer. The problem is that the computer was made to work with the European PAL System, and I have been unable to get anything but lines on my television screen, which is an NTSC system. Can anything make them more compatible?

Orman Ward
St. Philip, Barbados

Only if you get your hands on either a PAL television or an NTSC-compatible 800XL. PAL stations and receivers operate at 50 cycles per second, while NTSC stations and receivers operate at 60 cycles per second.— ANTIC ED

"EXTRA" MED-RES COLORS

*A number of readers wanted to know how Darrel Anderson got more than four colors onscreen in ST medium resolution for his first-prize picture in the DEGAS competition (**Antic**, July 1986). We asked him to explain, and his reply is printed below. By the way, two DEGAS pictures by Anderson were included as a bonus on **Antic's** October monthly disk.*

—ANTIC ED

In answer to the questions regarding Stoneage, my DEGAS Contest winner: I used the standard checkerboard fill pattern to "mix" additional colors for the ST

continued on page 8



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medium resolution picture. The fine, regular structure of the fill creates a nearly invisible blend of the two colors used. This is important because any noticeable pattern would tend to flatten forms, destroying the illusion of contour or perspective.

Just using this fill can add six more colors to the initial palette of four. Patterns designed with the Make Fill option can mix different percentages of any two colors. The checkered fill, of course, is 50/50. Sets of patterns to mix three colors are also possible.

Darrel Anderson
Colorado Springs, Colorado

EXPRESS! UPDATE

Thanks to **Antic** and your readers for the kind things said about the Express! family of public domain telecommunications software in the August, 1986 issue. It's incredible how many people apparently had never heard of Express! before.

Keith Ledbetter
Richmond, VA

See the review of Ledbetter's new commercial program, BBS Express!, in this issue's Communications Section.—ANTIC ED

P:R: UPDATE

Antic has just learned from ICD Inc. that the price of their P:R: Connection (reviewed in October, 1986) is now $89.95, and ICD's phone number has been changed to (815) 968-2228.

CHIPS IN

I just had the new ROM chips installed in my 520ST. What happened to the desktop accessories? Without these, how do I set my VT52 or RS-232? Worse, how do I get software such as Express! to work with TOS in ROM?

Booting the TOS in RAM seems to take care of this. If so, why did I waste my money on the chips?

Patrick Sky
Wakefield, RI

Copy your desk accessories to your new boot disk—any file with a .ACC extender. Or just rename TOS.IMG to TOS.OFF of the disk you use now.—ANTIC ED

***Antic** welcomes your feedback, but we regret that the large volume of mail and online messages makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish (and upload) I/O answers to questions that are meaningful to a substantial number of readers and online subscribers.*

***Send letters to: Antic I/O Board, 524 Second Street, San Francisco, CA 94107.** ANTIC ONLINE has an I/O section for email to the Editors only—online queries about Antic products should be uploaded to the Customer Service I/O section of ANTIC ONLINE.*

Help!

MICRO JULIUS

For some dates, *Micro Julius* (June, 1986) has been found guilty of putting in the wrong day of the week. To cure this, type in the following one-line fix:

```
WF 830 DIF=(DOW-D)/7:DIF=2*
   INT(7*(DIF-INT(DIF))+0.5)
   +1
```

FILE MASTER

Disk owners should load *File Master* (August, 1986) from DOS and copy the program to another disk. It does not RUN properly from the monthly disk menu.

To repeat last month's fix for *File Master*: If you have the lockup problem that occurs under some combinations of DOSs and disk drives, change the 100 in line 2625 to a 90.

WEFAX SOURCES

As we went to press, **Antic** learned that Radio Shack is in the process of discontinuing the XR2211 chip specified for the *WEFAX* interface board. (September, 1986) Equivalent chips can be found at other large electronics suppliers.

We also have new information for those WEFAX readers interested in obtaining the NAFAX (national facsimile circuit) telephone weather service:

Don't call the number given in the WEFAX article! Instead, the first step in arranging for a NAFAX hookup should be to phone the National Weather Service in Silver Springs, Maryland at (301) 427-7714. They will give you information on how to get a FAX permit. They should also be able to give you details on the nearest site to which you could hook up for their service.

Once you know this, you can query an AT&T sales specialist at (800) 222-0400 about the cost of a two-point hookup to that site. This cost varies according to distance and other factors.

Our apologies to Erik Weber for omitting photo credits from his photographs, which appeared in WEATHER FACSIMILE WORLDWIDE in the September 1986 issue of Antic.

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Hacker Jack

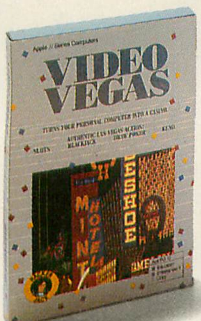
There's my friend Ted and his games for kids. A trip to Vegas without leaving home. Even hi-tech hot licks for you guitarists! They're all great, if I do say so myself. So call me now, and order yours right away.

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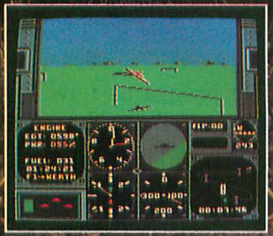
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Take the evaluation of Senior Editor David Martin, in *Private Pilot* magazine's August 1986 issue. Martin, a former Navy aviator who has flown almost everything with wings, reviewed five MicroProse programs, including the bestselling Solo Flight primary flight simulator. "I'd not have believed it possible . . ." he wrote, "Pilots of all sorts will be fascinated by these aviation games."

Mr. Martin isn't the only pilot who's spent many of his recent leisure hours with MicroProse simulations. Comparing his experience in training real flyers with the instrument layout found in Solo Flight, Cessna Flight Instructor Mark Rice told us "the instrument flying segments are very similar to the real thing – you're up in the clouds and using your readings to guide the aircraft."

Concorde pilot and former RAF jet flyer John Hutchinson reviewed Micro Prose' sport flight AcroJet for the British press. His conclusion: "this simulation is one that really does live up to its real-life counterpart . . . I find AcroJet completely absorbing and very exciting." High praise, from the man who flies the world's fastest airliner . . .

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BY J ROGER KEARNEY

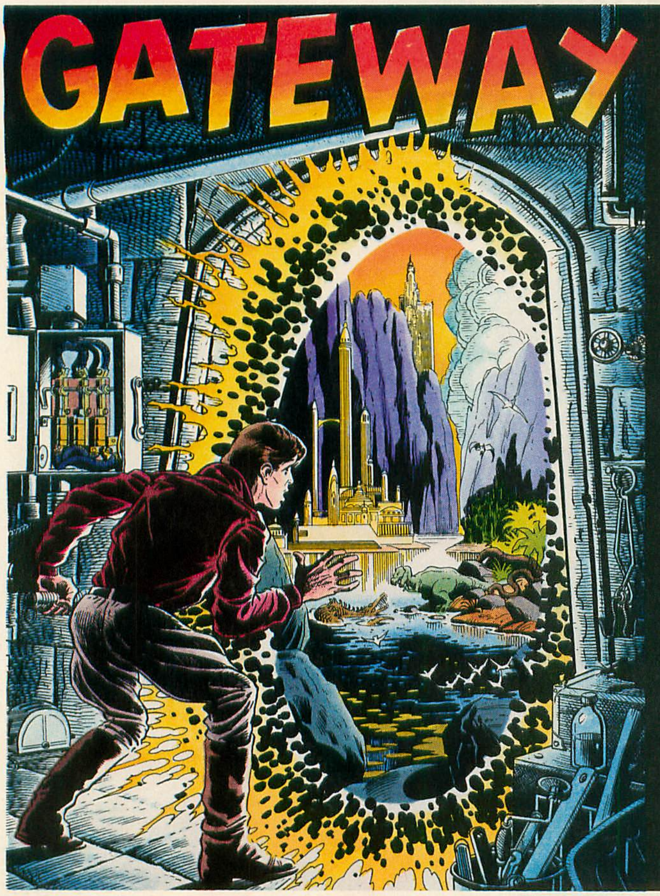
Budget dB provides the kind of powerful, user-friendly personal finance help you'd expect from a commercial software product. This BASIC program makes it a lot easier to create and maintain an itemized budget with categories that you can change to fit your own needs. It also balances your checkbook and reconciles your credit accounts, even if you don't want to keep up a monthly budget. Budget dB works on Atari 8-bit computers with at least 48K memory and a disk drive.

Ward Schumaker

One of the best ways to manage your money properly is to set up a budget and keep track of your spending. But for many of us, setting up a budget is a difficult process. Budget dB can't *force* you to live within a sensible budget. But this personal finance database program can do just about everything else you need for taking control of where your money goes. In fact, you can use most of Budget dB's features—such as balancing your checkbook—even if you don't wish to set up a monthly budget.

Budget dB tracks your actual spending, displays your monthly budget alongside your monthly expenses in spreadsheet format, and lets you define your own budget categories. Budget dB keeps your expense information in a database file that can be accessed in many useful ways. You can list all expenses in a category for

continued on page 13



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checks that have not yet cleared the bank. You can select all payments made to a specific creditor, such as the phone company. Results of your database inquiries can be listed on the screen or printed out.

Budget dB keeps track of the balance in your checking account and tells you the next check number to be used. It can reconcile your checking account to your bank statement, and it also helps reconcile your credit card accounts. Budget dB can record the sales tax on each transaction and keep a running total for use in your income tax return.

Budget dB is written entirely in Atari BASIC. The program stores data in a compressed format to save space. It can store some 700 transactions in a 48K Atari system—more than enough for a year's worth of data for most people.

USING BUDGET dB

Type in Listing 1, BUDGETDB.BAS, check it with TYPO II and SAVE a copy before you RUN it. At the beginning of each year, make yourself another working copy for the new year's data.

Antic Disk owners: Copy this program to another disk before you RUN it, because the monthly disk doesn't have enough room for the database file created by Budget dB.

When you RUN Budget dB it displays the date when the program was last used, and you are prompted to enter today's date. You can enter March 4, 1986 as either 3/4/86 or 03/04/86. Then the program presents you with the main menu.

Budget dB's main menu lists eight functions.

1. Enter transactions
2. List transactions
3. List budget/actual
4. List miscellaneous information
5. Reconcile checkbook
6. Reconcile charge account
7. Set up data
8. Save on disk
9. Quit

It's a good idea to experiment with Budget dB before you set up your real budget. You can learn a lot about how Budget dB works by simply trying out all the functions.

SET UP DATA

Main menu selection 7, "Set up data," takes you to this sub-menu:

1. Set budget
2. Set check #
3. Name categories
4. Set balance = $
5. Clear all data

Option 3, "Name categories," allows up to 26 different categories (A-Z) in your budget. When you first set up the program, leave a few categories blank. After using Budget dB for awhile, you'll probably decide to add more categories.

Budget category names are up to six characters long and can be changed at any time. For example, if you want to change category B to stand for spending on books, choose the "Name categories" option and type B-BOOKS.

Credit card accounts such as VISA, MasterCard and department store accounts should be included as budget categories. These accounts could be grouped together and handled as a single credit category, but they're easier to track if you keep them separate. Budget dB will also help you reconcile your charge records to your monthly statement.

A 27th category — @ — is used to report transactions at bank cash-dispensing machines where the money is withdrawn from your checking account. You can rename the category something like @ NOWCSH. But don't remove the @, and save this category only for bank terminal withdrawals. When you're through entering your category names, press [RETURN] to get back to the main menu.

When using the submenu's "Set budget" selection to enter budgeted dollar amounts, you can enter an amount to be repeated every month for a particular category, or you can type in different amounts each month. You can use the system for a few months without budget amounts filled in. Budget dB tracks your expenses and shows you how you're spending your money. You can add or change budget amounts anytime.

"Set check #" is used for telling the program what check number is next in your checkbook. "Set balance = $" is where you enter the starting balance in your checking account or correct the balance.

ENTER TRANSACTIONS

When you choose selection 1 from the main menu, Budget dB displays your budget categories, your checkbook balance and this sub-menu:

1. Check# (followed by your next check number)
2. Check# (you enter the check number)
3. Charge
4. Cash
5. Deposit
6. Sv chg

Choose 5 to record a deposit, or 6 for a service charge to your checking account. Choose selection 1 if you are paying by check and the displayed check number is correct. Choose selection 2 for out-of-sequence checks. If you charged the purchase, choose 3, or if you paid cash, use 4. When asked for the date of the transaction, press [RETURN] if you want today's date. If you want a different date, type it as described previously.

If you want to keep a yearly total of sales taxes paid (for a deduction on your income tax return), enter the tax when prompted. Payee names (Fred's Grocery) can't be longer than eight characters and are different from category names such as F-FOOD.

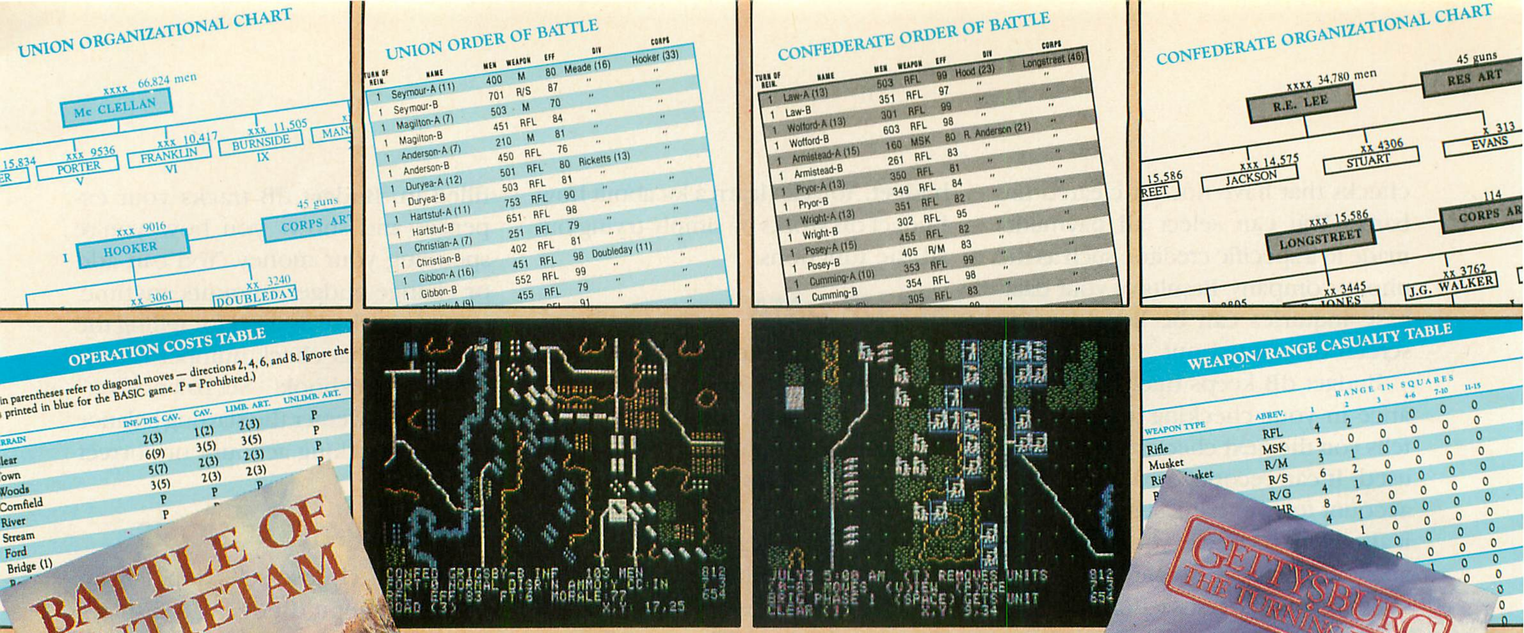
If you use a bank terminal to withdraw money from your checking account, type 0 for the check number. Then for the budget category type @ (hold down the [SHIFT] key while pressing [8]).

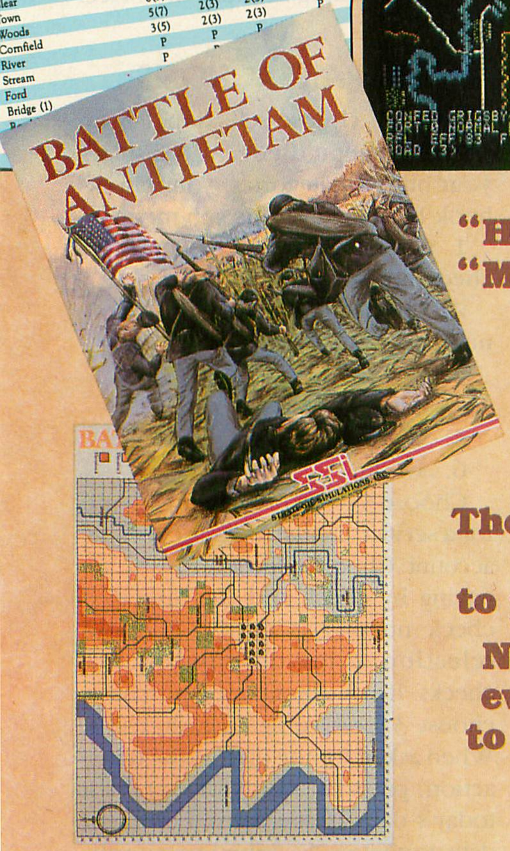
LIST TRANSACTIONS

Main menu selection 2 is used to "List transactions" entered earlier. You are asked to choose one of the following:

1. Cleared checks

continued on page 16







"HIGHLY RECOMMENDED"
"MORE THAN FIRST RATE"
"EXCELLENT GAME"
"REVOLUTIONARY"
"A TRUE CLASSIC"
"A MUST"

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— Computer Gaming World, April 1986

"Battle of Antietam *is a must for anyone with even a mild interest in the Civil War. The simulation is easier to understand than many others of its kind...it's more than just another game.*"
— COMPUTE!'s Gazette, June 1986

"*Like all SSI games,* Battle of Antietam *has been meticulously researched and is a tactical game on a grand scale... SSI has produced dozens of computer war games, gathering praise from many sources.* Battle of Antietam, *however, may transcend previous efforts and become a true classic.*"
— COMPUTE! June 1986

"Battle of Antietam *is highly recommended...highly absorbing and a superb presentation of one of the most historic battles of the Civil War.*"
— Computing Today! May 1986

Needless to say, we're pleased by this flood of compliments. But at SSI, we're our own harshest critics, which is one reason SSI continues to be the acknowledged leader in computer wargaming. We immediately set out to create another Civil War game that further raises the standard for strategy simulations. The proud result is *GETTYSBURG: The Turning Point.*

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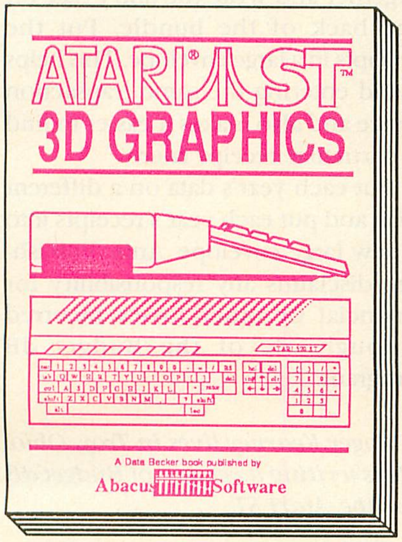
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BUDGET dB
continued from page 13

2. Uncleared checks
3. All checks
4. Cleared charges
5. Uncleared charges
6. All charges
7. Cash purchases
8. Selected from all types
9. All transactions

If you select 1-8, you will be asked to further specify which transactions you want Budget dB to search for. If a valid month number is not entered for the starting month, transactions for all months will be listed. If you want the transactions printed as well as displayed on the screen, answer Y when prompted and be certain the printer is ready.

Main menu selection 3, "List budget/actual," displays your budget and the actual amount of money you spent in each category. You are prompted to enter the number of the month you want displayed. Press [RETURN] to get the current month. The default category is A, but you can type in any category letter you wish.

Selection 4, "List miscellaneous information," displays the total sales tax you do not have to establish a budget at all to use Budget dB. The program will assume that your budget is zero. However, it will still track your actual expenditures. After reviewing the actual numbers for a few months, you will find it much easier to create a budget.

Keep your receipts in some convenient location—kitchen drawer, old shoebox, etc. Don't throw any receipts away. When you don't have a receipt for a purchase, make one by jotting down the amount, date and other details of the expenditure. This is particularly important for any charitable cash donations, so that you have a written record for income tax purposes. Once a week, sort all your new receipts into budget categories.

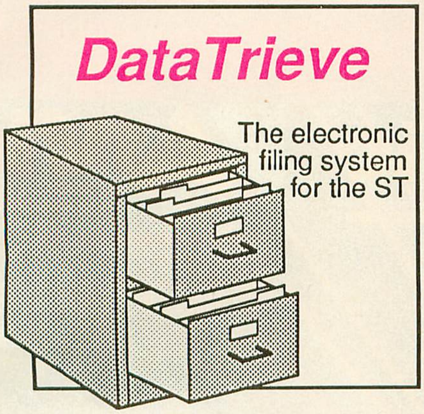
After you type the information into Budget dB, staple the week's receipts together and write the entry date on the back of the bundle. Put the receipts in a large envelope. This helps avoid entering the same transaction twice and also makes it easier to find a particular receipt later.

Put each year's data on a different disk and put each year's receipts into a new large envelope. Antic Publishing disclaims any responsibility for financial or other losses incurred through use of the Budget dB program.

J. Roger Kearney lives in Troy, Ohio. He is writing a version of Budget dB for the Atari ST.

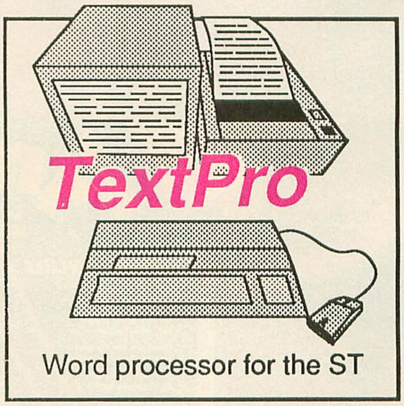
Listing on page 111

AA Rated Software Atari and Abacus



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A simple-to-use and versatile database manager. Features help screens; lightning-fast operation; tailorable display using multiple fonts; user-definable edit masks; capacity up to 64,000 records. Supports multiple files. RAM-disk support for 1040ST. Complete search, sort and file subsetting. Interfaces to TextPro. Easy printer control. **$49.95**



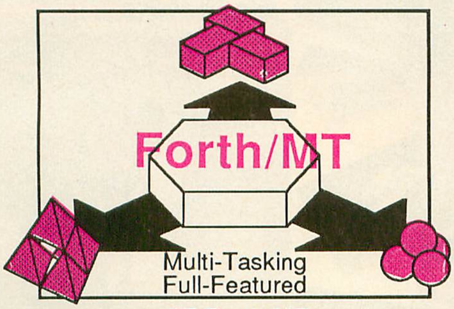
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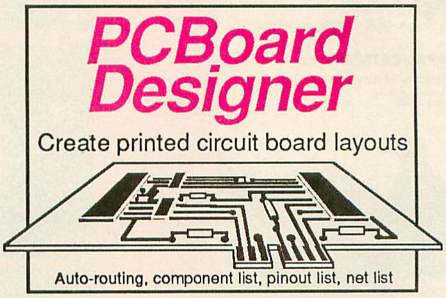
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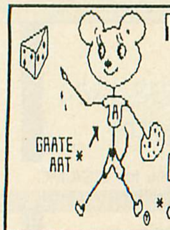
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Adrian Day

BY ELAINE PATTERSON



Calculate Your Car Loan

Payments you can live with

With Car Financer, you not only can figure out how much your monthly payments on a car (or any financed purchase) will be, but you can also determine how you might save money with different payment plans. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.

This summer I was hit hard by "New Car Fever." I felt I must buy one or die trying, so I started looking for the automobile of my dreams. Then when I found it, I almost died of sticker shock.

I told myself to forget it, because there was nothing wrong with my current auto. However, for some reason the urge just wouldn't go away. And before I knew it I was sitting in front of my Atari trying to determine how much money I would need to scrape together for a down payment. This program is the result. Naturally it will also work with any other financed purchase, such as major appliances or vacation packages.

You can change any of the numbers to see how it alters the monthly payment. For instance, I found that if I added $200 to the down payment, I could pay off my loan in 30 months instead of 36.

Also, be warned that if you pay a sales tax rate different from the rate where you live, you'll probably get a bill from the state for the difference.

TYPING TAKE-APART

Type in Listing 1, CARFINAN.BAS, check it with TYPO II and SAVE a copy before you RUN it. When you start using the program, simply respond to the onscreen prompts.

In lines 30-350 the program asks you to input the price of the car you want, whether or not you'll be trading in another car, the tax rate, the down payment, miscellaneous expenses including tag and title, the finance rate, the number of months over which payment will take place, and the source of the loan (bank or car company).

Lines 360-380 determine your monthly payments if you borrow from a bank. This section is the formula Interest = Principal * Rate * Time.

Lines 390-470 calculate the payment if you go through the car company, which is better for you—especially if you pay off early, because you get back a refund of the interest. However, the routine for figuring out the monthly payment is more difficult. I included a loop which takes place "M" times (with M being the number of months of the loan). The amount of monthly payment is adjusted until it falls to within $40 above or below the total amount financed. This should make little difference in the amount per payment, but that

continued on page 25

difference will vary according to the length of the loan. The amount won't be exact, but will give you a reasonable estimate.

Lines 480-1040 print the information either on screen or on a printer, and lines 1050-1070 and 2000-2010 are the option to quit or keep going. The [BREAK] key is disabled in lines 3000-3010.

RUN-THROUGH

Let's run through the program once as a demonstration. In my case, I bought a late-model Ford Bronco priced at $10,900 so we'll enter that number when prompted. For "Will you trade in?" we'll press [Y] for yes, and enter $3,400. We'll enter the sales tax rate at 4 percent, a down payment of $3,000, miscellaneous expenses (tag, title, etc.) at $5 and the finance rate at 15.25 percent. The loan will be paid over 30 months. Finally, when the program asks, "Will this loan be from 1. Bank, or 2. Car finance company (GMAC, Ford, etc.)," we'll press [2]—we're lucky enough not to have to go through secondary financing.

The screen shows the word "Working" in inverse video, which flashes as the program goes through the loop in lines 390-470. This might take a couple of minutes.

When the calculations are finished, we'll see the prompt, "Do you want the results on: 1. Screen, or 2.

When I found my dream car, I almost died of sticker shock.

Printer?" We'll press [1] and the display should look like this:

Price: $10900

Trade-in value: $3400

Tax rate: 4%

Down payment: $3000

Finance rate: 15.25%

Amount financed: $4805

Months: 30

Interest: 976.9

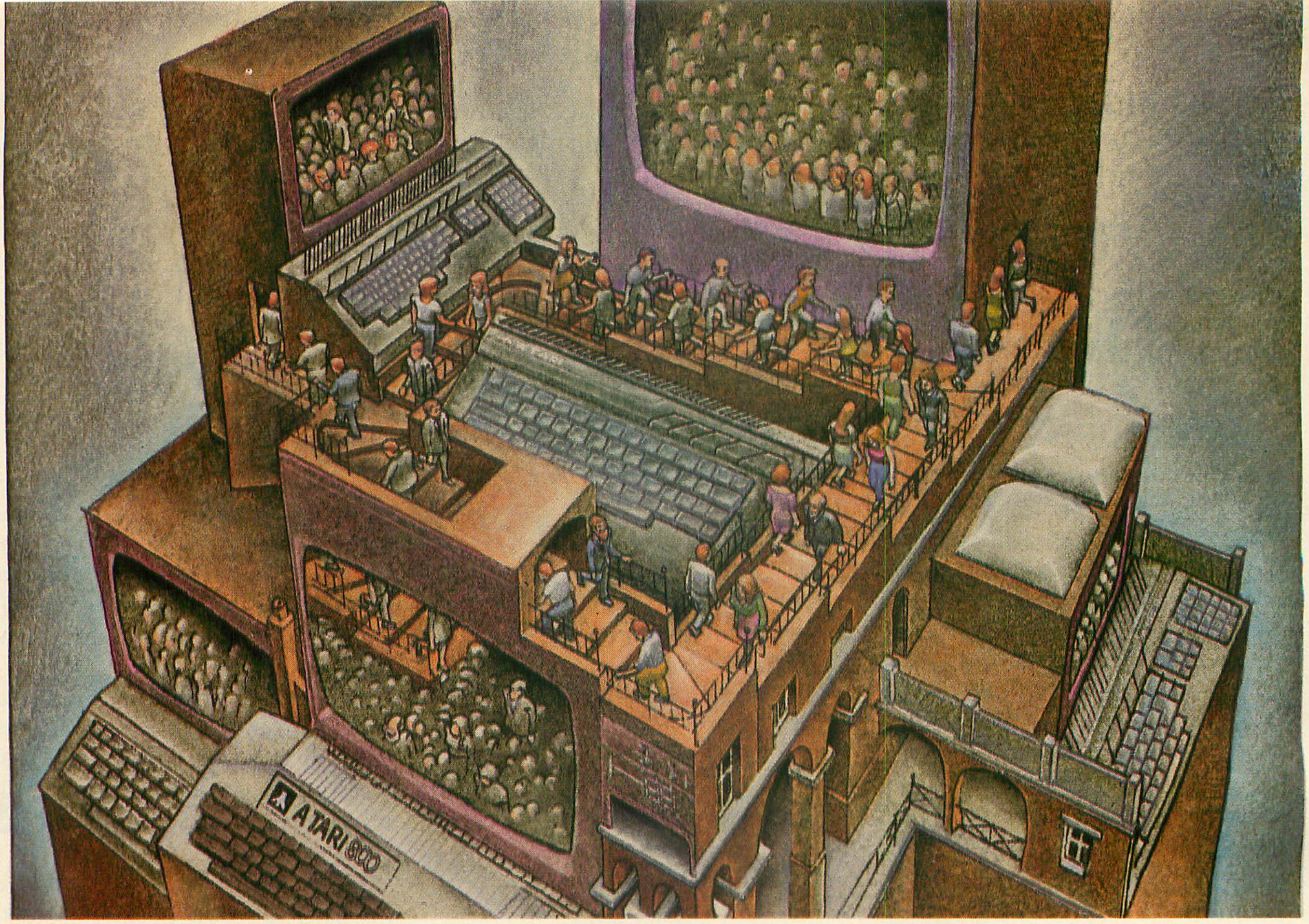
Total to repay: $5781.9

Monthly payment: $192.73

These figures don't take into account every minor expense, such as supplementary life insurance. But you'll get a very close estimate of your actual payments. Car Financer's estimate was within $3 of the actual monthly payment.

Car Financer helped me a lot, and I think it can help you, too. It puts your mind at rest by showing how much money a potential purchase will really cost you. Listing on page 107

Elaine Patterson is a mathematics teacher from Blue Ridge, Georgia. This is her first publication in Antic.



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Cliffhanger

BY HEATH LAWRENCE

Mars open-pit mining: No picnic!

Cliffhanger is a frantic attempt to defy Martian gravity. With your mechanical catcher, you must grab debris as it hurtles—sideways—before it collapses the cliff you're standing on. This BASIC program works on all 8-bit Atari computers of any memory size, on disk or cassette.

(It was a dull afternoon at the Antic Submissions Department—until we opened the unusually bulky envelope from Canada. Heath Lawrence's cover letter explained that he'd been working on a book of type-in Atari games that publishers kept turning down because "Atari products are not marketable anymore." Now he had seven completed games to offer ***Antic****. Were we interested? Well, since Heath's games were clearly right up there with the best we have ever published here, we were more than interested—we delightedly accepted most of the collection! The current plan is to put all our Heath Lawrence games into print by the end of 1987, publishing one game approximately every other month.*—ANTIC ED)

The year is 2010. Advancements in space technology have made it possible for Earth-based companies to establish mining operations throughout the solar system. A research team on Mars has uncovered rich deposits of vital minerals deep beneath the planet's surface.

continued on page 29

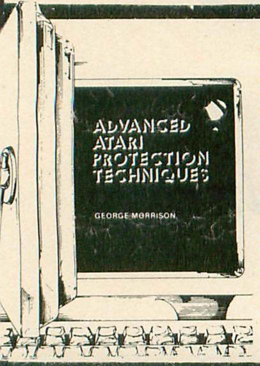


BOOK I + DISK: (The Original) Thoroughly explains the techniques used by advanced software pirates, and the copy protection methods used to stop them. It offers clear and understandable explanations sophisticated enough for software writers of any scale yet easy enough for a beginner just wanting to learn more about Atari® computers. A MUST READ FOR ALL ATARI® OWNERS.

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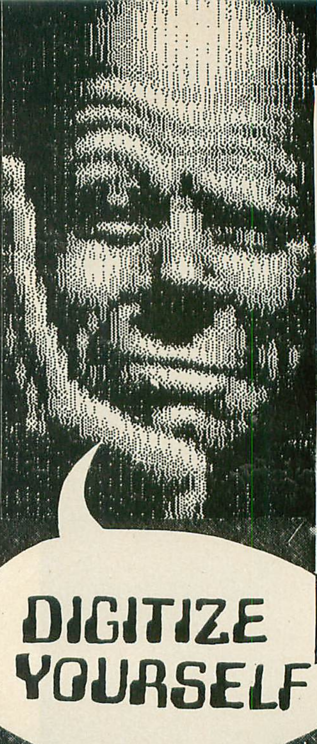


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Computer Eyes Gr.9 Acquisition Software. $12

Computer Eyes lets you take any form of video input and saves it as a high-resolution graphics screen. You can use a video camera, VCR, TV output, video disk, other computers, etc. Now you can capture your picture, your friends or any video image and show it on an Atari computer. Computer Eyes is an innovative slow scan device that connects between any standard video source and your Atari computer (see the review in A.N.A.L.O.G. magazine).

- Do a complete Hi-Res scan in under 6 seconds
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Now anyone can create the kind of graphics seen in this ad. When Computer Eyes is combined with Magniprint II+, you get unique capabilities that no other system can offer.

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CIRCLE 007 ON READER SERVICE CARD

Wasting no time, the enormous industrial firm of Hugopolis Inc. has set up a mining colony on the Red Planet. But the mining has created instability in the Martian crust, constantly causing huge chunks of rock and debris to hurtle from the excavation into the sides of the open mining pit—which threatens to bury the whole operation.

PLAYING CATCH

You must capture chunks of debris before they demolish the side of the pit. Your only equipment is a speedy Catcher Cage. To activate this Catcher Cage: Type in Listing 1, CLIFF.BAS, check it with TYPO II and SAVE a copy before you RUN it.

The Catcher Cage consists of two parts. There's a grabber that can be raised and lowered by pressing or releasing the joystick button. Attached to this is a pulley that moves sideways when you push the joystick left or right. You cannot move the Grabber vertically and the pulley horizontally at the same time.

> *Heath Lawrence's 8-bit games rank with the best ever published in Antic*

Any debris touched by the moving Catcher Cage will be caught and conveniently disposed of in a nearby acid bath. The lower down in the pit you catch the debris, the more points you get.

Further complications? You bet! Mining on Mars releases highly explosive Radon gas bubbles into the atmosphere. Should your Catcher Cage touch one, the gas within will be released and destroy you instantly.

Also lurking in the pit are harmless blue creatures called Gruds. Offworld protests by wildlife preservation groups have made destroying these creatures illegal. Killing a Grud results in the loss of five points.

Each time a chunk of rock strikes the cliff face, the danger level (shown in the bottom right corner) increases by one. When the stress reaches five, it makes the cliff collapse, destroying the mining operation and you. The Catcher Operator's booth is stationed at the top of this cliff. So when it collapses, you are buried.

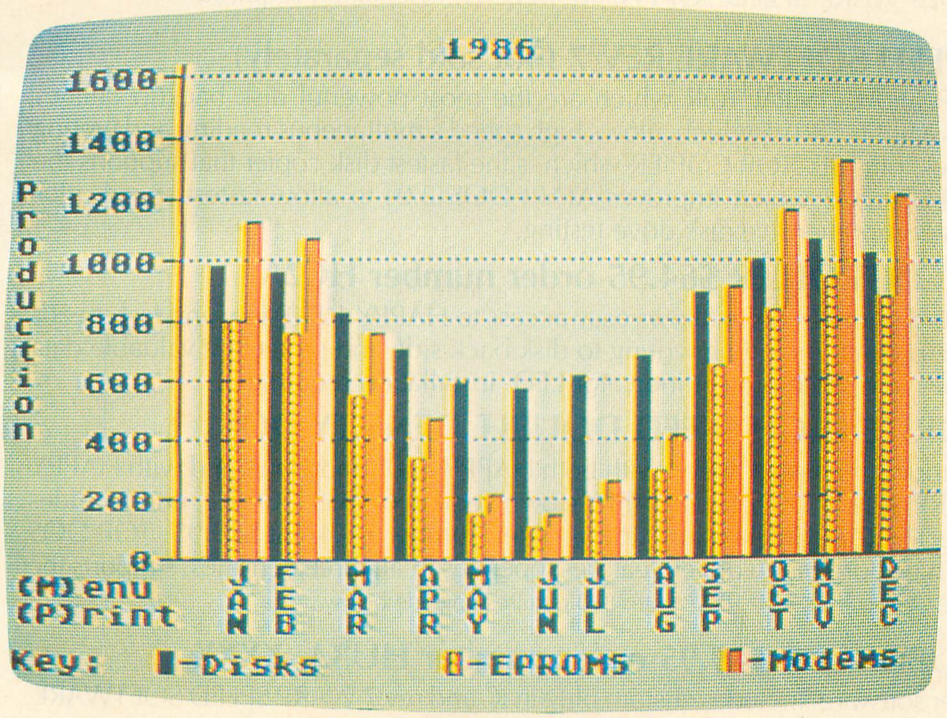
The key to Cliffhanger is anticipating where the next chunk of debris will hit and getting there first with your Catcher Cage. Another useful method is the "fishing technique." Just press the joystick button and let the Catcher Cage descend a little way below the debris. When the rock is directly over the grabber chain, release the button. Also, the Catcher Cage moves twice as fast as the debris, so you'll probably get another chance if you miss the first time.

Heath Lawrence lives in Port Elgin, Ontario, and has been programming on his Atari 800 for four and a half years.

Listing on page 108

V-Graph

Pro-quality visual punch for your reports



BY ALFRED FILSKOV III

V-Graph draws professional-looking business or school graphs—bar, line, or point graphs—that you can display, save and print. This straightforward, useful graphing program also accepts data from VisiCalc spreadsheets. The BASIC program works on all 8-bit Atari computers having at least 48K memory and a disk drive.

Let your 8-bit Atari help you get through your next important report or presentation. V-Graph is a graphing program for business or school that stands comparison to many professional packages running on "business computers." It creates, displays and prints impressive bar graphs, line graphs, or point graphs—and it can use data from VisiCalc spreadsheets.

If you don't have VisiCalc, type in the numbers with a word processor, such as PaperClip or AtariWriter Plus. To word-process a data file for use with V-Graph, you only need to follow two rules. 1. All the data numbers in your file must be in a single column. 2. the last digit of each number must be exactly 11 spaces right of the left margin. Therefore, your file would look something like this:

```
          887
         2745
           91
        13019
          562
         6473
```

In its present form, V-Graph does not work with SynCalc (Broderbund) or A-Calc (Antic Catalog) spreadsheet software. If you program a conversion patch, please send it to **Antic** to be considered for possible publication.

Also, V-Graph's current graphics

continued on page 36

CIRCLE 021 ON READER SERVICE CARD

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INSYST!

SoSoft Software
2513E Sylvester Road
Albany, GA 31705
(912) 888-0821
$79.95, 48K disk
CIRCLE 237 ON READER SERVICE CARD

Reviewed by Stephen Roquemore

InSyst! is just the ticket for the small businessman who needs a complete inventory tracking system. It is written in speedy ACTION! language, but you don't need the ACTION! cartridge to operate InSyst! The program is not copy-protected and encourages use of two disk drives (Atari 1050 preferred). With two drives, you can track 1,698 inventory items without disk swapping. InSyst! even supports the Atari 10-key numeric pad, if you have one.

On an 800, the software's speed from one record to the next and between menus was only average. However, when I ran InSyst! on a 130XE the real power of this program became apparent. Transitions between menus were almost instantaneous. Record processing was much faster than on the 800 or the XL because of automatic use of the 130XE RAMdisk for program modules. The manufacturer claims an average record access time of under two seconds. I would recommend InSyst! to any Atari owner—but for 130XE users, this little Clark Kent really turns into Superman.

The InSyst! manual is well-written and easy to understand. Other manuals should be so good. The first section discusses creating your System Disk using DOS 2.5, which comes on the Master, or creating your System Disk with your own DOS. You can use any DOS which is file-compatible with DOS 2.5 or 2, but not DOS 3. Section Two presents a good method to follow in your own business, including systematic data backups . Other sections give detailed explanations of the Main Menu, the Edit/Add Screen, the Reports Menu and the Disk Menu.

InSyst! runs on any 8-bit Atari with at least 48K memory. But on my standard 800 model, InSyst! does not automatically boot all the way to the Main Menu. You must press [RESET] and answer "Y" to the resulting prompt, which takes you to DOS where you use the Binary Load function on the file. InSyst! disables BASIC as part of the boot process, so you won't need to hold down the [OPTION] key on the 800XL and 130XE. This apparently causes the boot problem.

On a 130XE, this little Clark Kent really turns into Superman.

After formatting your data disk, you return to the Main Menu and select Edit/Add Records. Entering the data will be a time-consuming process if you have a few hundred items to track. Item identification codes can be 12 characters long, description fields can be 24 characters. There are fields for bin location and vendor codes. The program can compute suggested orders and track multiple costs on purchases.

All data records are easily entered and edited on a single nicely laid-out screen format. The top part displays the basic information on each item, the middle section is for adding or editing receipts and sales at a particular cost on a given date, the bottom portion displays sales history for each item, on a first-in, first-out basis.

Pressing [RETURN] moves the cursor to the next field, the [TAB] key backs you up to the previous field. Once the fields have been entered to your satisfaction, you can add or change the record by entering [CONTROL] [A] for Accept, [CONTROL] [D] for Delete, or [CONTROL] [E] to Edit.

Pressing the [ESC] key is the standard exit throughout the program, if you want to leave before accepting the changes. You can use [CONTROL] and the arrow keys to move right or left in a field. Scrolling through one record at a time, forward or backward, is done with [CONTROL] and the up/down arrow keys. I found some of the command sequences a little difficult at first, but they soon became second nature.

You can modify the 10 default report formats provided and then save them to disk for automatic loading when you boot InSyst! The possible combinations should meet almost any need. You can also specify many of the printer parameters required to format your report. Reports can be printed to the screen as well as the printer, and in abbreviated format which you can specify. You can also save your choice of screen colors.

This program is one of the best-written, best-documented and most professional efforts I have seen for 8-bit Ataris. Data input errors by users are minimized by well-done data checking and error trapping routines. InSyst! renews my faith in the future of the 8-bit machines. I highly recommend InSyst! to anyone who needs an excellent inventory system and doesn't want to invest an arm and a leg.

CHECKBOOK PLUS

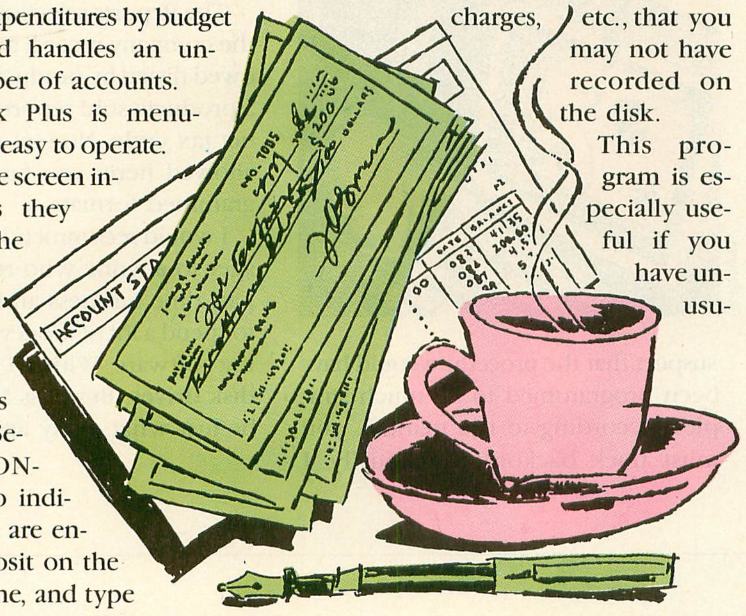
A-Plus Enterprises
3790 Blenheim Road
St. Joseph, MI 49085
(616) 429-8666
$14.95, 48K disk
CIRCLE 245 ON READER SERVICE CARD

Reviewed by Gregg Pearlman

If you regularly drive yourself crazy when you balance your checkbook,

★★★★★★
PERSONAL FINANCE

then **Checkbook Plus** might be just what you need to help restore your sanity. As the title indicates, this little program helps balance a checkbook, records outstanding and cancelled checks, keeps track of deposits, categorizes expenditures by budget category, and handles an unlimited number of accounts.



Ward Schumaker

Checkbook Plus is menu-driven, so it's easy to operate. Just follow the screen instructions as they come on. The main menu has nine choices. To set up a new account, press [1] for Enter Selection, [CONTROL] [D] to indicate that you are entering a Deposit on the "Check #" line, and type in your account balance. To keep track of the account, enter checks and deposits in the same manner. The program keeps a running balance, displaying a Yes/No prompt to ask if the balance is correct.

In entering checks and deposits, the cursor moves from Check # to Date, Name (16 characters) and Amount. Then you choose from 15 budget categories. A formatted disk without DOS holds about six files of 400 checks each, and files can be linked.

Selection [4] on the main menu is the List Reports feature. This searches for individual checks by name or number, displays all checks and deposits (or only the ones outstanding or cancelled), displays and sorts checks based on a selected budget category, displays the check numbers and running balances, and sorts the checks in numerical order.

Balancing your checkbook with Checkbook Plus is easy. The program keeps track of all outstanding checks you enter. Use main menu option [3], Print Outstanding Checks and Deposits, and compare the checkbook balance with your bank statement. If the two balances aren't identical, use the program to determine entries that could account for the difference. Also, search for service charges, etc., that you may not have recorded on the disk.

This program is especially useful if you have unusual accounts, such as interest-paying checking. Just enter the interest from your statement as a deposit, and type "interest" on the Name line.

Your bank statements are computer-generated, and usually any discrepancy between the bank's numbers and yours can be accounted for by your mistake. Now you can eliminate that, because computers, so they say, don't make mistakes. When your balance is calculated by a computer on each end, it has a much better chance of being accurate.

BUSINESS MANAGER

Reeve Software
29W150 Old Farm Lane
Warrenville, IL 60555
(312) 393-2317
$49.95, 48K Disk
CIRCLE 214 ON READER SERVICE CARD

Reviewed by Stephen Roquemore

Business Manager is a nicely produced tool for the small business owner who needs a simple accounting system to track sales and inventory without getting lost in a lot of bells and whistles.

This icon-based program supports Reeve Software's Super ReeveKey, a 10-key number pad, and the Rat, an 8-bit mouse from Zobian Controls. Naturally, Business Manager can also be operated entirely from the Atari keyboard. Menu icons are selected by typing a number or clicking on the chosen icon with the Rat. The basic choices are Maintain Company (which you need to do first), Customers, Products, Invoicing, Reports, Utilities and Exit.

Written in Atari BASIC, Business Manager is also compatible with BASIC XE from OSS and takes advantage of the 128K memory in an Atari 130XE. The program is not copy-protected. It comes with two disks and 12 separators for your monthly printouts. I highly recommend using two drives with the program, to avoid onerous disk-swapping.

With the Maintain Company selection, you set up the basic data about your company—address, phone number, etc. Here you also specify a system with either one or two disk drives, set your customer tax codes, name as many as three pricing levels and set your last invoice number. All this is written to side A of the program disk as the company record. But confusingly, the 15-Page manual says nothing about what disks should be in what drives when this happens.

The second main menu choice, Customers, is where you add or change customer records, record customer payments, print customer lists or mailing labels, or change customer disks. You can have 350 customers per disk, indexed by a five-digit number.

With the Products selection you add, change, or delete product records, maintain inventory and print

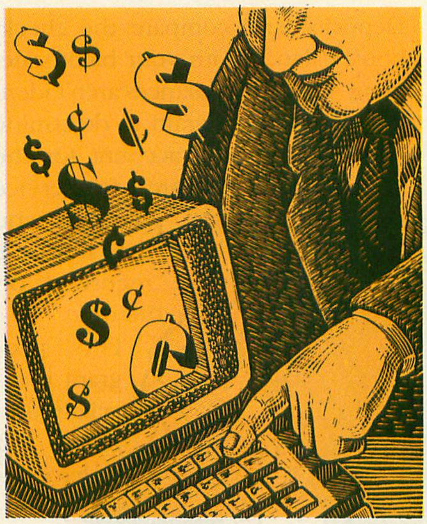
continued on next page

★★★★★★
PERSONAL FINANCE

product lists. You can have 600 products per disk. A product record includes a five-digit product number (0-99999), a description, a tax code, the minimum stock level and the quantity on hand.

The Invoicing selection is used for assembling invoices for outgoing shipments by searching the Customer and Product disks for the data you want. When you have found what you need, you can add products, cancel, display or print the order. You can have 99 products on an invoice. When displaying the order, you can change any of the data on the screen. When you print the invoice, a copy is written to disk.

The manual thoroughly discusses how to build an invoice—it takes more than a page to explain. And I


Cris Mortensen

suspect that the procedure could have been programmed to be much simpler. According to the manual, you must track backorders manually. I think this also could have been included in the program with little effort. Additionally, it is cumbersome that in order to delete an invoice, you must first re-create it by using a printed copy of the original.

The Reports selection lets you print the company record, a report of taxes owed (listed by product tax code) and a products-sold report, also by product tax code. No real customizing is allowed here; you just get the programmed formats.

I would recommend Business Manager to anyone who runs a small or part-time business and doesn't want to spend a lot of money on bookkeeping software. With a 130XE and two disk drives, Business Manager could be just what many are looking for.

V-GRAPH
continued from page 31

dump routine was written to work with Epson-compatible printers. However, at **Antic**, we sucessfully got V-Graph printouts with the Epson FX-85, C. Itoh M-8510, Gemini 10X and Star Micronics SG-10 and SG-15. If you want to substitute your own graphics dump routine, put it at lines 670-710.

USING THE PROGRAM

Type in Listing 1, VGRAPH.BAS, check it with TYPO II and SAVE a copy before you RUN it.

If you use VisiCalc to create columns of data for graphing, be sure to save the data to disk with the /PF (print to file) option. First, position the cursor at the top of the first data column on the spreadsheet. Type in the command /PF and type in a filename at the prompt (but leave out the extender). When prompted for "lower right," move the cursor to the bottom of the data column and press [RETURN]. Repeat these steps for each data column.

V-Graph can simultaneously graph as many as three data files containing up to 100 data points apiece. But each file must contain the same number of horizontal X-coordinates, and the data values must range beween 0 and 900,000. Negative numbers won't be accepted, nor will non-numeric data such as spaces or "header" files.

Graph as many as three data files containing 100 data points apiece

Once you have created data files, you can run V-Graph. When the data is loaded and ready to graph, the program will figure a scale for the vertical Y-axis. Then it will ask if you want the horizontal X-axis labeled by letter, month or number. Next, it will ask for a graph title and a label for the Y-axis. If you want neither of these, you can just press [RETURN]. If you are graphing two or three files at once, you must enter labels for each file.

You can draw a line graph, point graph or bar graph, but be aware of the limitations of the bar widths. For example, a three-file bar graph will be squeezed together if it has more than 12 data points per file. This works out well, however, because of the 12 months in a year.

After the graph is drawn, you can either return to the menu or dump the graph to the printer to make a hard copy of your data. Now your professional-looking graphs are ready for that important meeting or report.

Alfred Filskov is a student at North Carolina State University, majoring in industrial engineering.

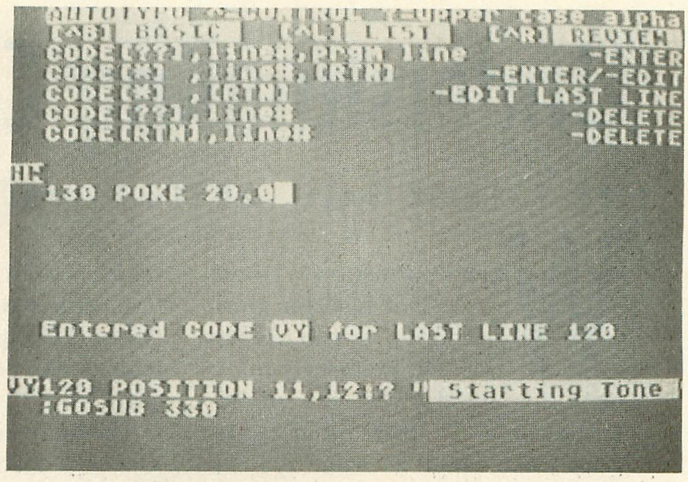
Listing on page 109

AutoTYPO

"Fail-safe" keyboarding for TYPO II

BY BRIAN SANDFORD

*In this enhancement of **Antic's** TYPO II listing proofreader, you type each two-letter TYPO code before the line number. If you make a typing mistake anywhere in the line, a beep sounds and the screen turns red. An optional Review mode lets you check TYPO II codes after you have finished typing an entire program. The BASIC program can be used with all 8-bit Atari computers of any memory size, with disk or cassette.*



I wrote AutoTYPO because when I enter a program listing I prefer to keep typing away until something goes wrong—and I wanted the proofreading software to automatically grab my attention when something has gone wrong. For me, AutoTYPO is a faster tool for checking program typing than the standard TYPO II. (***Antic** deliberately kept the original TYPO II as short and simple as possible, because it is used by so many Atari beginners. This has left a lot of room for more experienced programmers to create interesting enhancements to the automatic proofreader. Exactly one year ago (November 1985, page 21), **Antic** brought together four of the best reader-contributed short enhancements for TYPO II in* Super Duper Typo II'per *(S.D.T.2.P.), including a machine language subroutine that makes the program run much faster. AutoTYPO uses the same speedy subroutine.*—ANTIC ED)

Using the old TYPO II method, you must keep glancing back and forth to compare the two-letter checksum codes on your screen and in the type-in listing pages of **Antic**. If you make a mistake such as accepting a CN code for a CM on just one line, your listing won't run even though you thought you proofed it 100% correctly.

Now, with improved AutoTYPO, you'll bravely ignore those pointing fingers on the pages of the **Antic** listings section that warn you, "Don't type the TYPO II codes." In exchange for the small amount of extra work required

continued on next page

to type in the two-letter codes at the left of each line number, you get a proofreading system that gives you better safeguards against human error—and, for touch typists, is faster.

Here's what happens when you enter a listing using AutoTYPO. Type in everything on the line, starting from the left—the uppercase two-letter TYPO II code, the line number and the program line. Press [RETURN]. If the line is entered correctly, the cursor just jumps to the next input line.

But . . . if the line is incorrect, there is a beep, the screen turns red and you cannot go on to the next line. You must retype the TYPO II code and press [RETURN] to redisplay the current line for editing. Use the normal BASIC editing keys to type the line corrections.

OPERATING AUTOTYPO

AutoTYPO and TYPO II share many common line numbers, so you *cannot* use TYPO II to check AutoTYPO. But you may use AutoTYPO to check itself, a process that will be described later. Therefore, *carefully* type in Listing 1, AUTOTYPO.LST, and LIST a copy to disk or cassette.

If you have trouble typing the special characters in line 32026, Listing 2 will create this line for you. Type in Listing 2, checking it with TYPO II, and SAVE a copy before you RUN it. When RUN, Listing 2 creates a file which contains line 32026. This line may also be used with the *TYPO II Double Feature* (**Antic**, November 1985).

Note that a LISTed program can be merged with other programs already in the computer's memory. (SAVEd programs can't.) This lets you use AutoTYPO to check **Antic** programs and program fragments already SAVEd to disk or cassette. Just LOAD your program fragment *before* you ENTER D:AUTOTYPO.LST, and you're ready to go.

To start AutoTYPO, type GOTO 32000, press [RETURN] and follow the onscreen instructions.

Only uppercase letters are accepted for the TYPO II codes. Illegal TYPO II codes, such as lowercase or inverse-video characters, sound a beep. If an incorrect code is entered, you can exit by typing any letter instead of a line number, followed by [RETURN]. The program doesn't accept blank program lines or lines without line numbers.

As explained above, to call back a line for editing you type an asterisk * followed by the desired line number, then press [RETURN]. If the line has no BASIC syntax error, its computed code is shown in the code window. If

Understanding Checksums

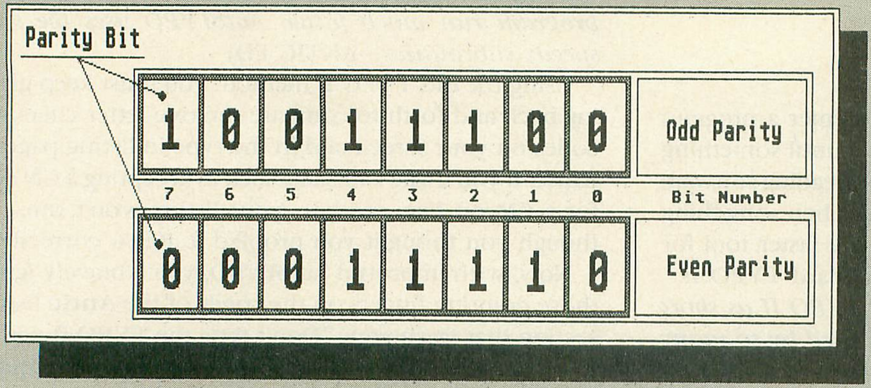
BY PATRICK BASS, ANTIC ST PROGRAM EDITOR

When information is stored in machine-readable form, we need a way to be sure that the recovered information is exactly what was stored. Even dropping a *single* bit in a character can change its value dramatically.

Checksums are the computer-generated tools for ensuring *accurate* transfer of large amounts of information, either numbers or characters. Personal computers can produce different types of checksums for different jobs.

The simplest (and least effective) form of a checksum is the *parity bit*, which is sometimes added to the leading edge of a byte when transmitted through a modem. Since any ASCII character can be represented by only seven bits, people sometimes agree to use the eighth (parity) bit as error-correction for each byte transmitted. If the byte has an odd number of bits set, the parity bit is set. If the byte has an even number of bits set, the parity bit is cleared. (See *Figure 1.*)

Figure 1.



When the byte is received, the number of bits set in it are counted and the parity bit is checked to see if it matches the required "even-odd" condition. If it doesn't, an error has probably occurred and the program posts a warning.

The parity bit protects a single byte. For insuring the integrity of a whole collection of bytes at once, we turn to a more intelligent form of error-correction. When people send large amounts of data back and forth online, they often use XMODEM, a standard which allows the transmission of blocks of information (typically 128, 256, or 1024 bytes long). This is followed by a checksum of all the bytes in the block.

that line doesn't exist, the line number will remain for a program line to be entered. This protects you from accidentally entering a new line over an existing one.

To delete a line, just press [RETURN], type the two-letter line code followed by the line number, and then press [RETURN] again.

Bravely ignore the pointing fingers that warn, "Don't type the TYPO II codes"

[CONTROL] [B] returns you to BASIC and displays a READY prompt. Any entered program plus the AutoTYPO program remains in memory.

[CONTROL] [L] gives you a screen with the prompt, "ENTER list device (X:FILENAME.EXT)." If "D:MYPROGRM.LST" is entered, lines 0 to 31999 are listed to disk drive 1. A "C: instead of the "D: lists to the cassette and "P: lists to the printer.

[CONTROL] [R] activates AutoTYPO's Review mode, which displays each line and TYPO II code of an **Antic** BASIC listing (or fragment) that you typed previously. Press any key to review the next line. Press [CONTROL] [D] to leave this mode.

Since the Review mode always begins with the first line of a program, you should note any lines with errors and then correct them in the Edit mode with the asterix [*] command.

Here's how to use AutoTYPO to proofread itself. First, change the number "31999" in line 32420 to "40000". Next, type GOTO 32000 and press [CONTROL] [R] to enter the Review mode. Finally, use the above procedure to check all the lines in AutoTYPO.

Enjoy using AutoTYPO, but make sure *all* lines in a program have been typed into the listing, because AutoTYPO cannot check for missing lines.

Brian Sandford lives in Concord, Massachusets and this is his first appearance in **Antic**.

Listing on page 114

The entire block of bytes is checked for integrity at one time. If the receiver-computed checksum doesn't match the transmitted checksum, the receiver usually asks the transmitter to re-send the block.

NCR AND CD

Next time you stay at a large hotel such as Holiday Inn, look at the entries on your bill when you leave. You'll find not only the amount entries, but two additional digits an inch or so to the right of each line. These are checksum codes guarding against human errors in keying data into the computer that runs the cash register.

Hotels normally ring up every bill for every guest every night. If guests already have balances on their bills, the night clerk must punch in the previous balance, ring up the latest charges and total up the new bill. Sleek, computer-run cash registers like the NCR 2250 simplify that. Whenever a new total for each bill is computed, the register also computes a checksum. Next time the clerk punches in the old balance and checksum into the machine, the NCR computes a new checksum of the amount entered. If the checksum doesn't match what the clerk punched in, the NCR just sits and beeps.

The amount of information on a silvery Compact Disk is staggering. And since the information on a CD is just binary numbers, we find a need for our old friend, the checksum. The CD player digests information in groups of as many as 566 bits at a time. Up to 64 bits of error-correction information are encoded with each group.

THE ANTIC WAY

At **Antic**, we use two different forms of checksums. For our 8-bit BASIC TYPO II listings, we use a checksum which is computed using a form of position-dependent summation. This works well for Atari BASIC because we can check each line as it is typed. Each character in the line is checked, and the two-letter is checksum printed left of the BASIC line number onscreen. You then compare these checksums to the codes printed next to each BASIC line in the magazine listing. If they match, you probably typed the line correctly.

By the way, you can use **Antic's** TYPO II to generate correct checksum codes for the type-in listings in the two other magazines that regularly publish some programs for 8-bit Ataris.

For our TYPO ST program, we use simple summation, because we are dealing with ASCII files of unknown format. Here, the values for all characters in each line—except for *spaces*—are added together. Each line's total is then converted into a four-digit hexadecimal number and the result is displayed or printed. You compare your TYPO ST table with the table published after the ST BASIC program in the magazine. Any line that doesn't match should be rechecked carefully.

The computer world couldn't exist without checksums. They are, in a real sense, the insurance policy of information transfer.

THE AMAZING VOICE MASTER

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By: R. Constan © 1985

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CIRCLE 023 ON READER SERVICE CARD

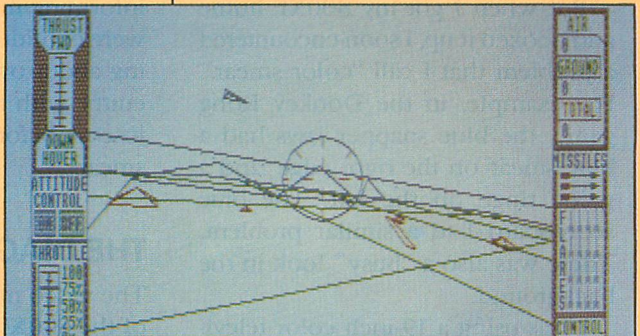
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CIRCLE 050 ON READER SERVICE CARD

BY JON KRAHMER

XL Color Boost

This is a simple hardware rewiring enhancement for improving color on the Atari 800XL computer. You'll need to solder one wire and one inexpensive capacitor. XL Color Boost requires a video monitor that has separate inputs for video, audio, and color—such as certain Commodore, NEC and Hitachi models. It will not work with a color television set. As with any hardware modification, opening up your Atari voids the warranty.

(Frankly, we have never been particularly bothered by the "color smear" problem the author describes in his article. But we tried this simple hardware rewiring project at ***Antic*** *and, in our judgement, it produced a more vibrant and intense 800XL color display on our monitors. In fact, it seemed to make 800XL color look a lot more like the outstanding color of the old Atari 800. Note that this project has only been tested with the Atari 800XL—there are differences between the main circuit boards for the 130XE, 600XL and 1200XL models.*—ANTIC ED

With the arrival of the Atari 800XL, I had at last found an affordable computer. I expected it to be better than my old 800 model, due to Atari's additional years of experience at making computers.

But when I got my 800XL home and hooked it up, I soon encountered a problem that I call "color smear." For example, in the Donkey Kong game, the blue snapper jaws had a blue smear on the right edge and a green tinge on the left. The blue scoreboard had a similar problem. There was also a "busy" look in the background.

I was using a 19-inch color television as a monitor, and I thought that the problem must be in the high frequency tuner or the IF circuitry. In search of a cure, I tried out several monitors. Each monitor eliminated the busy background, but the green tinge and blue shadow remained. I concluded that the problem was in the computer.

I have been involved in electronics most of my life and I design and build instruments. For my next project, I set out to improve the color of the 800XL.

I wrote a letter to Atari asking for the 800XL schematics. A reply came informing me that these schematics were confidential. I ended up spending about one week tracing the circuitry with my voltmeter and oscilloscope before finding a cure for color smear.

THE DIAGNOSIS

The video monitor jack on the back of the 800XL is a 5-pin DIN connector. According to my information, these pins are supposed to provide

Hotwire for 800XL color

Figure 1

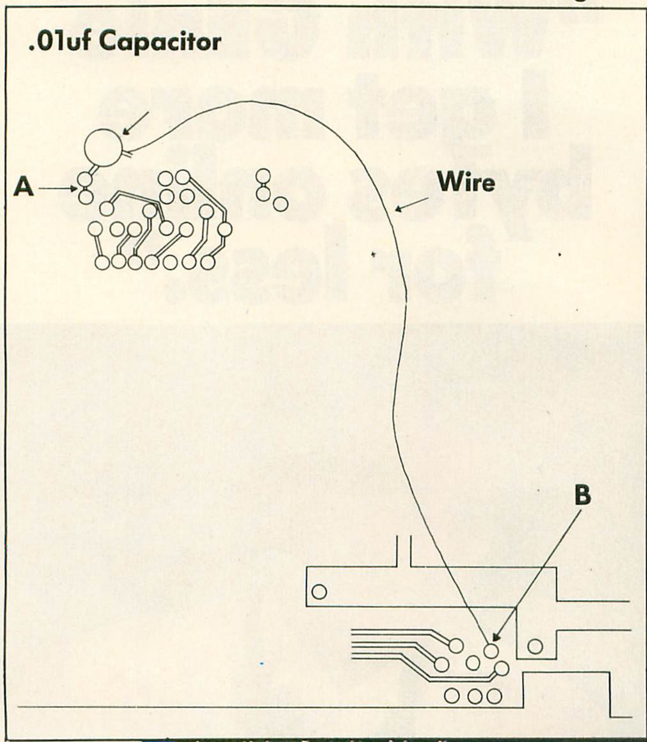
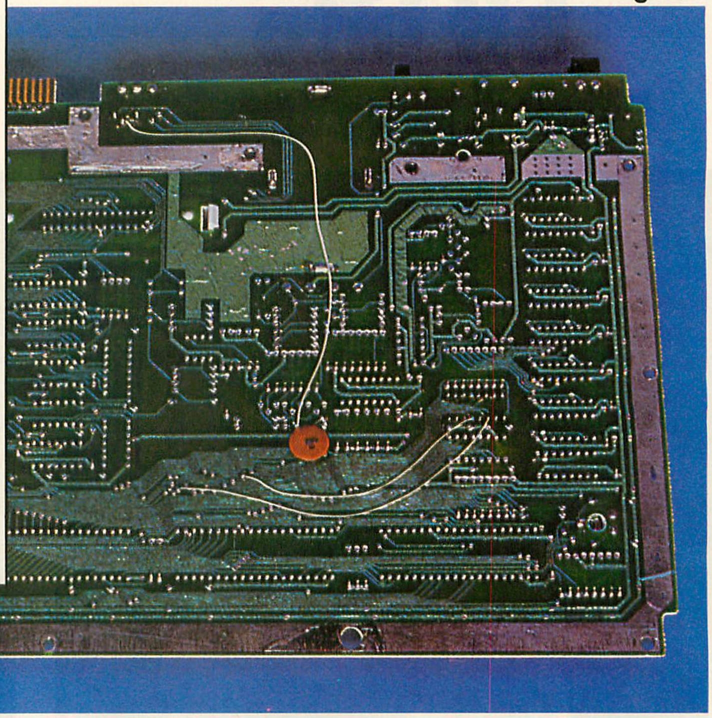


Figure2



ground, audio, composite sink, composite video, and composite chroma (color). However, I did not find that to be the case.

Instead I found ground, audio, a complete composite for picture and color and a composite with everything but color. One pin had no connection.

When I finally isolated the chroma, it became apparent that there was a very simple fix. All I needed to do was solder one end of a .01 microfarad disk capacitor to the composite chroma (color information) and the other end to the unused pin of the monitor jack. You should be able to find this kind of capacitor for under $1 at most electronics shops.

After the simple soldering was completed, I tried out my machine and PRESTO! No more color smear. But let me make an important point. This modification works *only* with monitors that have *separate inputs* for video, audio, and color—such as Commodore, NEC and Hitachi models.

INSTALLATION

(As with any hardware modification project printed in ***Antic****, we must remind you that if you open your Atari, you void whatever warranty coverage you may still have left on your computer.*—ANTIC ED)

Be sure to observe the way that parts fit together before you remove anything! Remember that you will have to reassemble your XL afterward.

Begin by removing the six screws from the bottom of your XL computer. Set the computer upright and carefully lift the keyboard (top half of the computer) about three inches. At this time, carefully note where the keyboard plugs into the bottom half of the computer. Unplug the keyboard by grasping both edges of the clear plastic ribbon connector and pulling slowly upward.

Remove the two retaining screws that hold the chassis (circuit board) into the bottom shell. Carefully work the chassis from the bottom shell. Remove the screws that hold together the circuit board and the metal shielding plates.

Cut a length of thin insulated wire about six inches long. Strip 1/16 of an inch from each end. Solder one end to Point B. (See Figure 1.) This is the connection to the monitor jack, as shown in the diagram.

Now take a .01 microfarad disk capacitor and cut the leads to 1/8 of an inch in length. Solder one lead to Point A, which is where you'll see the R64 and R97 connections labelled on the main board. Solder the free capacitor lead to the free end of the wire. Put a piece of black electrical tape over and under this connection. When you reassemble your XL, route the wire so that it will not be pinched when you tighten the screws.

If you have any doubts about your ability to do this project successfully, I strongly suggest that you take your Atari 800XL and this article to a qualified electronics technician.

Jon Krahmer is an electronics consultant from Vista, California.

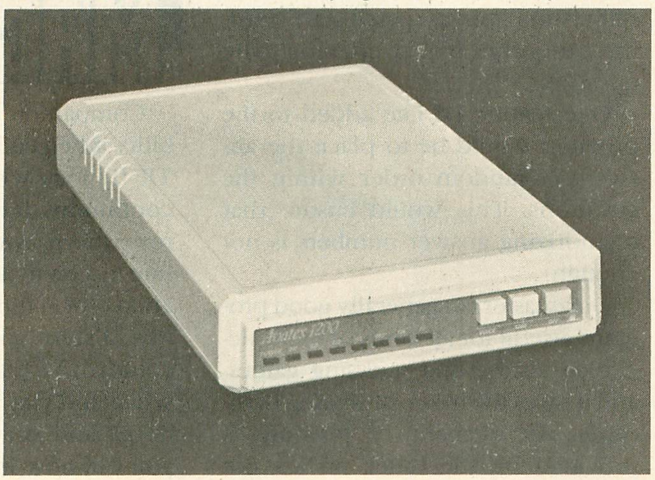
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CIRCLE **206** ON READER SERVICE CARD

Reviewed by Thomas Mosteller

The **Avatex 1200** modem delivers substantial Hayes compatibility and reliable 1200 baud operation at unbelievable discount prices—$89 from some mail order companies, even $79 in some mass purchases by users groups.



Mary Rhomberg Lavery

ST owners can hook up their Avatex 1200s with a double-sided 25-pin cable from the local computer store. We 8-bit types need an RS-232 serial cable that connects to the Atari 850 interface or to ICD's P:R: Connection (reviewed in the October, 1986 **Antic**).

Since the store-bought 8-bit cables run about $40 (when you can find them), I decided to make my own. If anybody knows why Atari chose to use a 9-pin RS-232 connector I'd sure like to know! The Radio Shack parts require some fairly close soldering.

Once the cabling to the computer is finished, just plug the Avatex to the phone line and power outlet, and set the DIP switches. A fixed 6-foot cable from the modem then goes into your phone. If you do not have a modular plug or a desk phone, adapters will be necessary (another trip to Radio Shack!).

After the whole system is connected, you can turn on the phone by using the data/voice switch on the modem. I found it more convenient to run a modular plug splitter from the wall jack and an extender cable to the modem. The line from the modem to the phone is then unnecessary.

Upon powering up, the power and modem LED lights are illuminated. TR (terminal ready) will light when your communications software activates the Data Terminal Ready (DTR) signal on the RS-232 interface. When the modem is Receiving or Sending Data the RD and SD lights will light. If the unit is operating at 1200 baud, the High Speed (HS) LED will light also. In normal operation, these LEDs are easily ignored, but they can be helpful in figuring out what's going on when the unit won't work.

The Avatex operates with a subset of the Hayes commands such as: ATDT to tone-dial a number, ATDP to pulse-dial, ATO and ATA to force the unit into originate or answer modes, ATAD to disable auto answer and ATAA to reenable it, and the handy ATZ to reset the modem for those times when you're really hung up.

However, since the Avatex only has a subset of the Hayes commands, some commands are missing. The average user won't miss most of the unavailable commands—except for ATH (hangup). The unit can't hang up in response to a software command. Avatex says that the only way to hang up is to toggle the DTR line—which is generally not accepted by commercial software.

Therefore you cannot use the Avatex to run a bulletin board with most available BBS software. (*We do hear that Avatex boards have been run successfully with BBS Express!—reviewed in this issue— and the Antic Catalog's Bulletin Board Construction Set.*—ANTIC ED) When you're sitting in front of your computer it's easy enough to hang up. Usually the system you're using will hang up for you, or you can toggle the data/voice button to disconnect the line. But if you're not there, how will you press the button?

Actually, I suspect that there might be a fairly simple software patch to drop the DTR line at the proper time. After all, we Atari types are a resourceful lot. Didn't we successfully use the MPP/Supra modem which plugs into the joystick port? I think this is a comparatively small challenge.

I could find only one minor glitch in the operation of the modem. When I was pulse dialing, my TV screen was plagued with dashes caused by interference from the unit's internal relay. The operation of the unit was not affected, but it just looked bad while the unit was dialing.

My overall impression of the Avatex 1200 is very positive. It operates as well as much more expensive units I've used, and it has never done anything that the manual said it shouldn't.

QUIZMASTER CONSTRUCTION SET

Ezuse Software
2850 Enea Way
Antioch, CA 94509
(415) 754-6026
$9.95, 48K disk

CIRCLE **201** ON READER SERVICE CARD

Reviewed by Gregg Pearlman

Ever hear of a bouncy, colorful, musical real estate quiz? How about a

continued on next page

perky multiple-choice biology exam? Ezuse Software's **Quizmaster Construction Set** can provide either one, as well as a whole range of quiz possibilities, from riddle-guessing games to foreign language tests to Trivial Pursuit game questions. You decide on the subject and type in the questions and answers.

Quizmaster Construction Set was written for those who just want to create quiz games and/or legitimate multiple-choice tests for their own practice or for students. Any number of questions can be prepared, limited only by available memory. To keep you on your toes, the questions are displayed randomly—a good device for the careless student who memorizes the answers in a particular order instead of studying the material itself.

> *It's not enough just to know the answer. You have to know it right away*

The opening screen plays Mozart at you, cutting off abruptly when you press [START]. This is a nice touch, but an entire 2 1/2-minute piece is programmed into the game. It's lovely, but no doubt it takes up memory that could have been devoted to more questions. The Minute Waltz might have made more sense.

Pressing [START] gives you a choice of two modes, Editor and Game. The Editor mode is for entering questions, at up to 120 characters each, and four answers per question, at up to 60 characters each. Entering and editng questions and answers is a quick, simple process. And the number of the right answer can also be changed.

You can use the joystick to play the game itself, but it's probably easier to use the keyboard. Once a question and answers are displayed, a 60-second timer counts down from 500. Pressing the correct answer number gives you the amount of points still remaining on the timer display. You get nothing for a wrong answer, but you do have the option of having the right answer displayed. If your answer is correct, you'll hear four notes and see a stick figure jump up and down.

While this might be a fun game for a younger child (at least for a while), it is probably more valuable when used for legitimate school-type quizzes. And if you prepare your own self-testing quizzes, you'll start learning merely by preparing the questions.

One feature I'd like added to the program would be to place the answers in random order within the questions. This would ensure that memorizing answer numbers is not enough.

Quizmaster is a generally good program, useful for all kinds of multiple-choice testing and guessing games, and it saves the hassle of writing flashcards. An element of pressure is provided by the timer, so it's not enough just to know the answer. You have to know it *right away* to do well.

PRINT SHOP COMPANION

Broderbund Software
17 Paul Drive
San Rafael, CA 94903
(415) 479-1185
$49.95, 64K disk

CIRCLE **248** ON READER SERVICE CARD

Reviewed by Michael Lasky

Print Shop Companion is an add-on program that makes Broderbund's best-selling Print Shop software even more versatile and useful. You can create your own monthly or weekly calendars, design your own borders, fonts and creatures. You can enhance existing graphics and fonts with the powerful Graphic Editor + —and then you can fill them in with a choice of 17 cross-hatch patterns.

The Companion accepts input from joysticks and touch tablets as well as the keyboard. A fail-safe Undo command lets you step back if you don't like the last artwork you've created. Instructions are remarkably clear both in the 36-page instruction book and in onscreen cues.



Companion offers scrolling capability when editing a screen, a [CONTROL] lock which lets you stay in a continuous draw or erase mode, mirror pattern, row and column guideline inserts to aid designs, horizontal and vertical flipping (handy for creative T-shirt appliques), a Negative command for transforming black to white and vice versa, plus lines, rays, boxes and ovals. With Companion you can now insert text in a graphic design, something Print Shop users were clamoring for.

Because Companion requires the original Print Shop program and doesn't support Atari systems with more than one disk drive, be prepared to perform frequent disk swapping. In fact, with another disk for saving your designs, you'll have to juggle three disks *and* keep flipping the program disks over. This is not only annoying and confusing, but it also severely slows down the entire editing and printing process.

The actual printing takes considerably longer than on machines with larger memory. The Atari version computes page layouts by printing the top and bottom of the page individually. That being said, however, I have little else but praise for this well-designed program.

Companion even includes code to help improve the quality of onscreen

images from the original Print Shop program. Don't like the available fonts, borders or graphics offered on any Print Shop Library disks? With Companion you compose your own and save them. The Tile Magic utility lets you freeze 11 moving patterns and then easily edit them to your needs with Graphic Editor+.

The Creature Maker utility offers some 1,000 possible combinations of predesigned animals and characters from hobos and outlaws to elephants and mice. You can, for example, put an elephant head on a clown body.

With the Calendar Maker you can print out a monthly or weekly calendar for any year from 1753 to 1999, and then add graphic decorations and fill in dates with events for your own personalized datebook.

Still sorely missed on any of the Atari disks, however, are lower-case letters which match the available fonts. Print Shop Companion has an individual set of lower-case letters. But they don't correspond to the other typefaces, so their use is extremely limited.

The supplied typefaces, borders and graphic designs on the Companion disk are displayed only on a separate reference card and not, surprisingly, in the reference manual. Thus you would be wise to photocopy the card and place the copy in the manual in case you misplace the reference card. Without it, using any of the Printshop functions would be like trying to drive a car blindfolded.

Because of memory restrictions, the Atari version of the Printshop Companion is missing several features found on the IBM and Apple versions. Also, Broderbund has copy-protected the Atari version, offering a backup copy for $10, while the IBM version, for one, allows users to make a free backup.

But despite its limitations, the Print Shop Companion, like its predecessor, is a major printing utility package with boundaries that are set only by the limits of the user's creativity.

HARDBALL

Accolade
20833 Stevens Creek Boulevard
Cupertino, CA 95014
(408) 446-5757
$29.95, 48K disk
CIRCLE **200** ON READER SERVICE CARD

Reviewed by Gregg Pearlman

If you like baseball simulations, you'll probably be intrigued by the unusual 3-D viewpoints in Accolade's joystick-controlled **HardBall**. Could you pass up that center-field camera shot of the pitcher-batter confrontation, or the little overhead view of the diamond with runners on base? Perhaps—if you really wanted statistics, playability and, especially, realism. Graphics is HardBall's strength. Realism isn't.

Without doubt, the game's best feature is its interesting 3-D perspective from three views—the screen you see depends on the location of the ball. True, the perspective is a bit strange in that outfielders appear to be much farther away than they actually are. But otherwise the game is visually enticing.

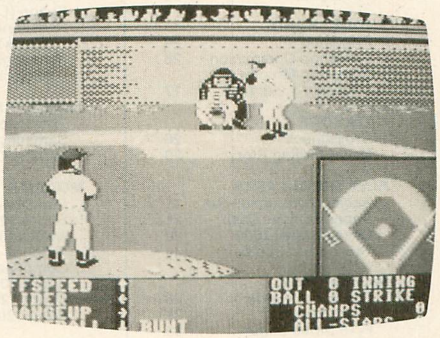
That center-field camera shot shows the pitcher, batter, catcher and umpire, and is a nice touch. When the ball is in play, the view is from behind home plate, showing whichever side of the field the ball is in.

In HardBall, you use the joystick for everything, from choosing lineups to selecting batters' guesses at pitch locations. First you choose your team, select between home team or visitors, and decide whether or not to use the designated hitter rule.

As for the quality of the gameplay itself, it is questionable at best. In real baseball, and indeed in most simulations, once a team has made three outs, it's time for the other team to bat. Yet in HardBall the defense tries to retire runners even after the third out is recorded. For example, if you have the bases loaded with two outs and your batter strikes out, try advancing your baserunners. Chances are good that you'll see six outs before the other team bats.

The computer doesn't play an intelligent game. Among other things, it habitually sends in relief pitchers at no logical juncture in a game—such as when the starter has a two-hit shutout in the fourth inning.

Still, the computer is a formidable opponent because it doesn't need joysticks to move its fielders, swing bats or choose pitches. A ground ball hit to the computer's second baseman will be fielded and immediately thrown to first base, but *you* must use



the joystick to maneuver your second baseman toward the ball and choose where to throw it. This process takes far longer than a real infielder takes.

Directing an outfielder toward the ball is a challenge because the ball gets up higher than the screen can show, and the shadow is the only reference point. The cursor arrows or commands using one or two keys would be preferable to using the joystick, and it would equalize the game a bit.

Baseball simulations, computer or otherwise, usually supply rosters or team sheets for current or past major league teams—World Series winners, All-Star teams, dream teams. Some games allow you to enter information for your own teams, such as a local high school or even a Little League team. But HardBall only has two fictitious teams, the All-Stars and the Champs, with no appreciable background information on those players aside from current statistics.

HardBall comes across more like an ambitious arcade game than a full-fledged computer baseball simulation.

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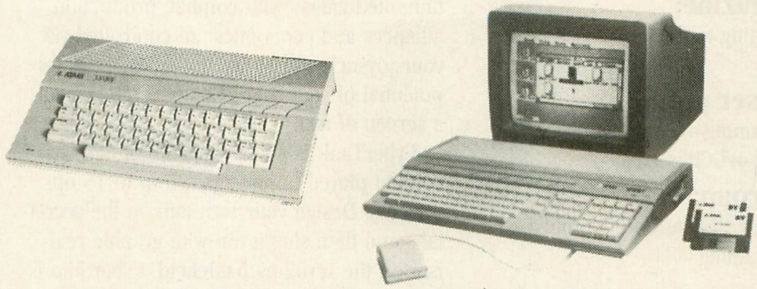
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REVIEWED BY CHRIS KING

BBS Express!

Puts the fun back into being a sysop

BBS Express! ($39.95) is a winner as the first commercial software from SIG*Atari sysop Keith Ledbetter, author of the widely used Express! series of public domain telecommunications programs for the 1030, MPP and modems using the 850 interface. (See **Antic**, September 1986, page 20.)

Written in speedy ACTION! language, BBS Express! was originally intended to provide a good BBS program for the 300 baud 1030 and 835 modems that plug directly into Atari computers. With the addition of a ring detector, those inexpensive, convenient modems are quite capable of supporting a bulletin board. The 1030 version also runs on the new Atari XM301 modem, which can answer the phone by itself and doesn't require a ring detector.

A second version of BBS Express! supports faster 1200/2400 baud modems that require the Atari 850 interface or the ICD P:R: Connection (reviewed in **Antic**, September 1986). Both BBS Express! versions function identically and can be switched without reconfiguring the bulletin board.

BBS Express! runs sucessfully with virtually all hardware available for the Atari, from the 800 to a 130XE with 576K upgrade, from the old 810 disk drive to the 10-megabyte SupraDrive hard disk operating under SpartaDOS 3.2. The 850 version has been run with Hayes and Smarteam modems, and it runs extremely well with the inexpensive new Avatex 1200 modem.

Remote sysop powers can be accessed from anywhere in the world

Sysops (system operators) can easily customize their bulletin boards with some powerful BBS Express! features. For example, all board prompts are stored in a text file that can be modified with any word processor. This file is then run through a prompt compiler utility, which creates a binary load file containing all of the selected board prompts. The binary prompt file is read by BBS Express! at boot-up time and stored in computer memory.

There are also 36 Variable Tags available to the sysop for use in menus and text files. For example, Variable Tag 01 is the name of the user logged onto the board, Tag 02 is the user's city and Tag 03 is the state. Upon log on, a welcome file is displayed. This can be any welcome message the sysop has composed with a word processor, looking something like this when created:

Welcome &01 to Midnight Express
How are things in &02,&03?

But it will look like this when displayed:

Welcome John Doe to Midnight Express continued on next page

How are things in Richmond, Virginia?

The Main Menu has 21 functions, and another eight selections can be defined through the prompt data file. Configuring the board requires some planning, because all the message bases and the user log are preallocated using the Make Message Base and Make User Log binary-loaded utilities.

The user log utility asks you "How many users?" The utility then starts creating each user entry in the file, up to the number you specified (maximum 999). BBS Express! also assigns passwords to new users when they respond "Yes" to the prompt asking if they want a permanent password assigned to them.

After you have set up the user file, it's time to create the message bases. You are asked for the base number, the base name, the base security level, the number of messages in the base and the maximum number of bytes in each message.

SCROLLING OUT

This process continues for each message base you want on the board, including one for electronic mail. There can be 25 separate message bases defined, each containing 75 messages at 1750 bytes apiece. With this preallocation technique you can cut down the free sectors on your data disks as close to zero as you want.

The message bases never grow in size because BBS Express! employs a scrolling technique. When a base fills up with messages, the newest one automatically deletes the oldest. The remaining messages are scrolled up and the new one is added—all in less than a second.

BBS Express! fully supports the use of sub-directories for all system files. This is especially beneficial if you use the SupraDrive 10Mb hard disk (reviewed in **Antic**, October 1986). RAMdisk support is also excellent; any file except the sysdata file can be put on the RAMdisk. If you place all the menu, help and library files in a RAMdisk, response time to the user is instantaneous.

The program can run using all currently available memory upgrades including the 256K I.C.D. RAMBO for the 800XL and both the 320K and 576K upgrades for the 130XE. In fact, the program has also run successfully entirely from a RAMdisk, including the user log and message bases. However, this could be a problem if you lose your electrical power and don't have a battery backup on your CPU.

The full remote sysop capabilities of BBS Express! can be accessed from anywhere in the world. Any user with a sysop security level can copy files, rename uploads to a lower security level, view a directory or text file and delete messages as required.

Such users must enter both their regular password and a secondary password, defined and changeable by the sysop. If the user does not enter the secondary password correctly the first time, he or she is logged off the system immediately.

BBS Express! supports both XMODEM and ASCII downloading. Eight different path names can be used to define where to store your upload and download files. For instance, you could define your path names as follows:

D2:UPLOADS>
D2:DOWNLOAD>
D3:
D8:DOWNLOAD>

In the above example, BBS Express! would send all uploads to D2:UPLOADS>, provided there was room on the disk. If not enough storage is available there, it would look at D2:DOWNLOAD> for the space, and so on.

When a user performs a Browse Files function, Express! looks through each path in the order that it was defined, seeking files to display. By using SpartaDOS, provided the disk space is available, you could have 1,024 files online for downloading, because SpartaDOS supports 128 files per sub-directory (as opposed to Atari DOS which can handle 64 files).

DOWNLOAD TRADING

As part of the system configuration file, the sysop can also specify an upload/download ratio between 1:1 and 255:1. For example, if the ratio is 8:1, the user can download eight files before being required to upload a file. After eight downloads, the BBS would not process any more requests for downloading until the user uploaded a file.

BBS Express! also has a library function accessed from the main menu. Each library menu can support 45 sub-library entries, each supporting another 45 entries, and on and on.

To achieve this, each library menu file has four components. The first line in the file contains the word "MENU," which tells Express! that the file is a selection menu file. The next line contains the number of possible selections (1 to 45). Next is the fully qualified text file names. The listed order corresponds to the order in which they're presented in the fourth part of the file, which is the actual selection menu displayed to the user.

Express! interprets these files by reading the first line of the file, and if it contains the word "MENU," it's processed as a selection file. Otherwise the entire file is displayed to the user. If it is a menu file, the next line is read to determine the number of selection entries to be expected. This number of lines is then read and stored into a memory table. The rest of the file contains the actual text that is displayed to the user. By incorporating "Return to Previous Menu" options, a user could venture several menus deep in the library and always return back up the chain to view a different selection.

While the library function was originally intended for viewing text-based files, an imaginative sysop could easily turn this structure into an online graphics and text adventure.

A printer can be used with BBS Express! to log callers and feedback to the sysop, but is not required. Express! gives you the option to define where

feedback should be routed, either as email to the sysop or logged to the printer. Also, the caller log can be routed to the printer or to any disk device, including the RAMdisk.

RARELY OFFLINE

Once everything has been configured and all the help and text files have been created, BBS Express! is ready to go online by binary loading from the DOS you have chosen to run the board. Any DOS with a LOMEM no higher than Atari DOS 2.0 will work with Express!. If an Atari DOS or compatible is used, you must back up the data disks containing the message bases and user log either by using the Dupdisk function or by sector-copying the data disk. This is required because the user log and message bases are heavily indexed.

When the program finishes loading, you can remove the program disk from the drive, and you are prompted to insert your data disks with the message bases and the user log and press [RETURN]. Express! then scans the index of each message base to retrieve and store the high message counter, which is used later to determine which messages posted are new to users since the last time they logged on.

Once the board is running, it virtually can run indefinitely. Files can be loaded to the disk and then copied off while the board is running by using the copy command from Sysop Mode. This makes it quite easy to do text file maintenance and make changes to the menus without needing to take the system offline.

The only thing requiring a system reboot is a change and recompilation of the prompt dataset. Express! loads this file only at boot-up time. I have run my board for as long as one month before taking it down, and then only to do disk backups—which I have *never* needed to use for restoring a trashed file.

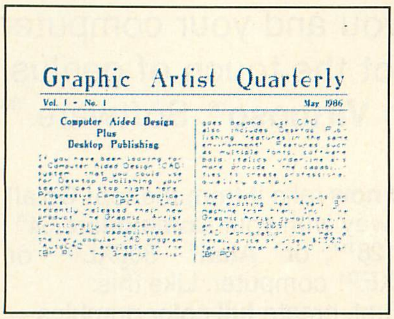
If you want a BBS that is easy to configure, easy to get online, runs forever and puts the fun back into being a sysop, then BBS Express! is definitely worth a close look.

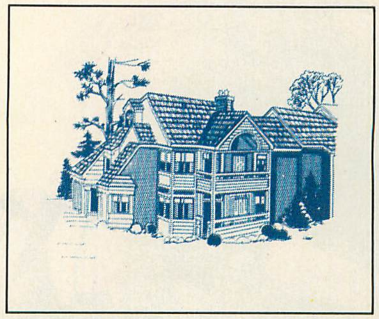
To see BBS Express! in action, call my bulletin board, Midnight Express. (804) 379-4156. It operates at either 300 or 1200 baud in ATASCII mode. I now have the BBS configured with 22 message bases, including email, and the user log is set to handle 950 users. First-time callers are validated online, with instant access to the message bases, library and files for downloading.

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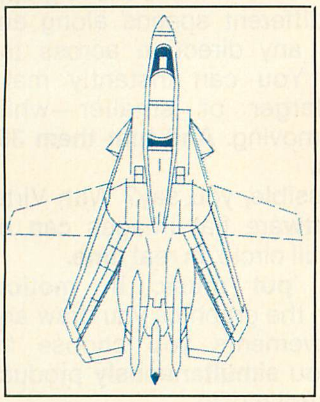
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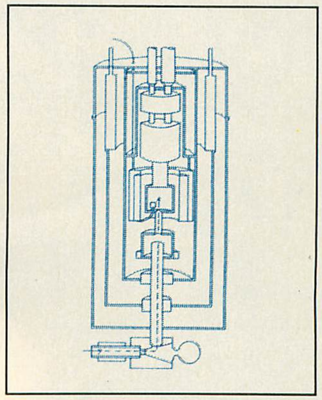




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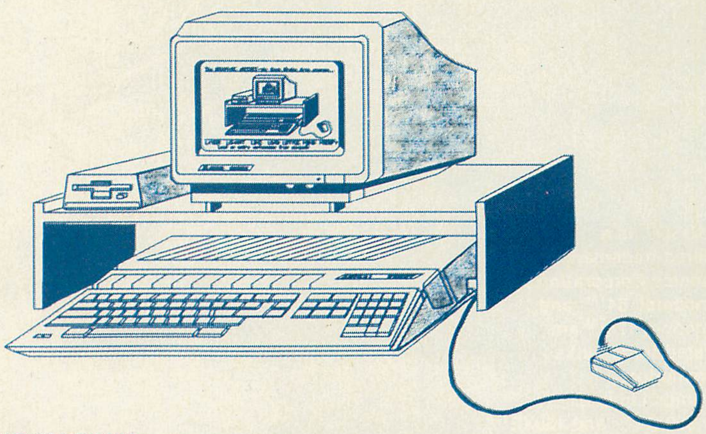
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—Current Notes

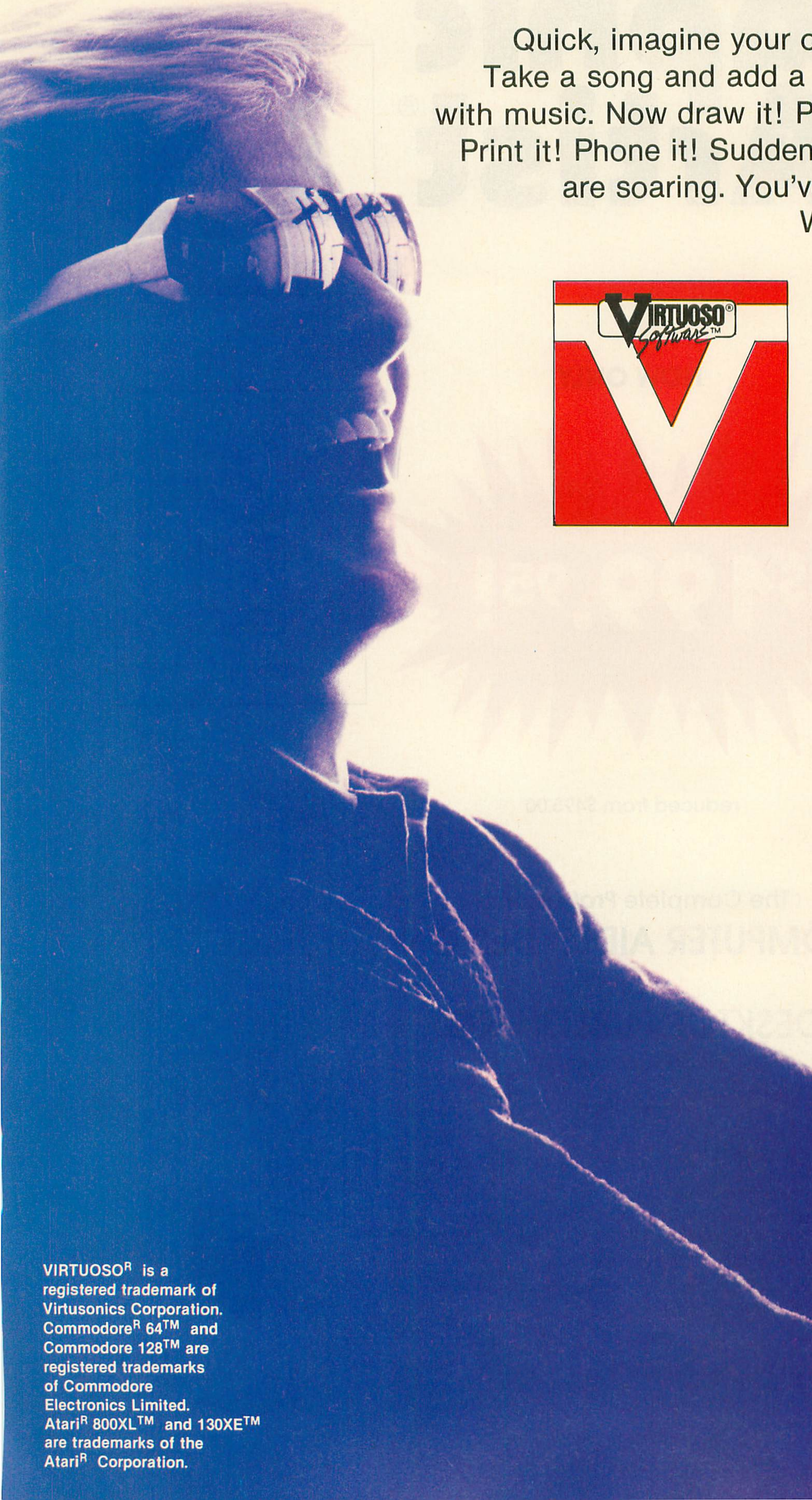
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in Fun Power is Here!

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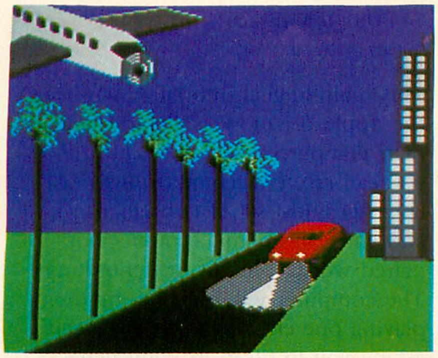
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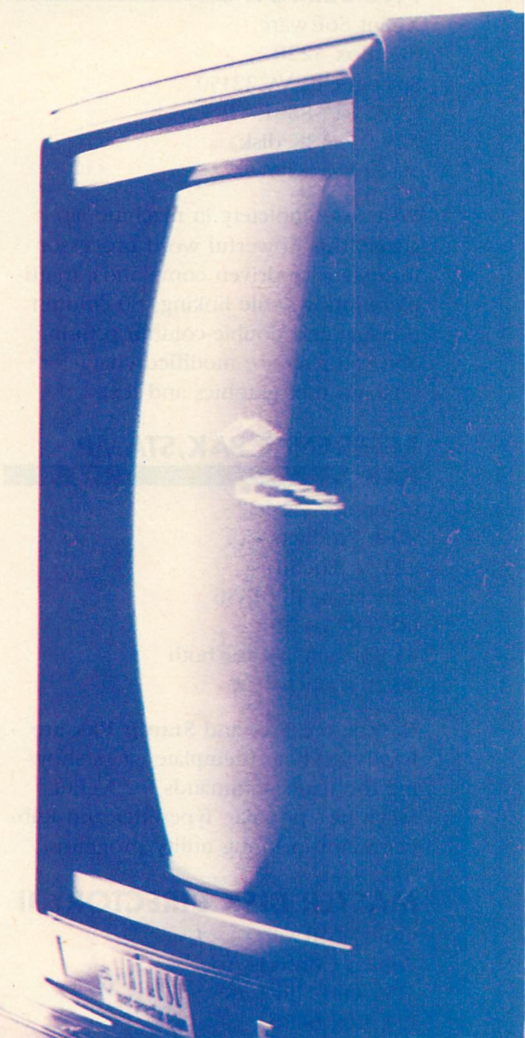
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—ANTIC ED

New Owners Column

Lesson 8: INPUT and DATA Statements

BY DAVID PLOTKIN, ANTIC CONTRIBUTING EDITOR

This series, which started in the March, 1986 issue, teaches beginners how to program in BASIC on all Atari 8-bit computers such as the 800XL and 130XE. Antic Contributing Editor David Plotkin is a chemical engineer.

Information used by a program can be divided into two major categories. Some information is built into the program, requiring nothing from the user. Other information must be provided by user responses—such as when the program asks for the user's name.

DATA STATEMENTS

Information built in by the programmer is often presented as a **DATA statement**, which is any line beginning with the word DATA. This tells BASIC to accept the rest of the line as written. So you can put just about anything into a DATA statement without making a syntax error. Different pieces of data are separated by commas, as in:

10 DATA 23,45,100,DAVID,ANTIC

DATA statements can load letters into strings and set the values of variables, among other things. But be careful with DATA statements. You *cannot* have any other statements on the line after the DATA statement. BASIC will consider additional statements (including any REM statements) as part of the DATA to be READ. This will cause an error when the program is RUN.

The **READ statement** gets the information which has been stored in the DATA statement:

10 READ A:PRINT A
20 DATA 100

The most straightforward way a program requests information is with INPUT

This places the value 100 into the variable A and prints it. You can READ multiple values at once by separating the variables in the READ statement with commas:

10 DIM D$(10):REM dimension a string
20 READ A,B,D$:DATA 100,200, DAVID

This puts the two numeric values into A and B and the word "DAVID" into string D$. It's perfectly acceptable to put the READ and DATA statements on the same line as long as no statements follow the DATA statement.

But how does the program know which value in the DATA statement goes into which variable in the READ statement? Normally, the first variable encountered in a READ statement gets the first value encountered in a DATA statement, the second variable gets the second value, and so on. The order the statements themselves are in really doesn't matter:

10 DATA 100,200
20 READ A:DATA 300,400
30 READ B,C:DATA 500
40 READ D,E

The variable A is assigned the value of 100, B gets 200, C gets 300 and so on.

But sometimes you *don't* want the program to assign values in strict order. One example is when you want to use the same group of DATA statements twice, perhaps to assign the same values to two sets of variables.

Another example is when you are READing and assigning values to variables in subroutines, which often are not executed in the order in which they appear in a program. The line in the subroutine which READs the DATA will be executed, but that DATA will be whatever happens to be the next line of DATA.

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NEW OWNERS COLUMN
continued from page 61

It is not often possible to predict when a READ statement in a subroutine will be executed, since it could result from an IF/THEN statement. The RESTORE statement can be used to tell the program which line of DATA is to be READ next:

```
10 READ A,B:RESTORE 30:READ C
20 DATA 100,200,300
30 DATA 1000
```

The values of A and B will be 100 and 200 from line 20. But the value of C will be 1000 from line 30, since the program was told to READ the next value from line 30 by the RESTORE 30 before READ C was executed. Note: RESTOREing a line which was already READ will cause the line to be READ *again*.

If there is any doubt about where a value will be READ from, it's best to use RESTORE. The line number in the RESTORE statement does not need to be a DATA line. If you RESTORE a line which does not contain DATA, the next line from which DATA is read will be the next line after the RESTOREd line which *does* contain DATA:

```
10 RESTORE 100
100 READ A
200 DATA 250
```

The DATA will be READ from line 200.

There are several things to be careful about when READing multiple variables in a program. The first and most obvious is not to run out of DATA. Trying to READ more variables than there are values in DATA statements causes an error.

RESTOREing lines to use them more than once can help avoid this problem. However, if you use RESTORE to skip some lines of DATA, you may reach the last DATA statement too soon. The program will *not* go back and use the skipped lines.

Another thing to avoid is mismatching your variable. If the program expects a numeric variable and gets a string of letters instead, an error will result.

INPUT STATEMENTS

The most straightforward way for the program to request information from the user is with the **INPUT statement**. BASIC prints a question mark [?] on the screen and waits for the user to enter information from the keyboard. The program will wait until the [RETURN] key is pressed before continuing on with the next line:

```
10 PRINT "What is your favorite number";:REM A message asking for input.
20 INPUT A
```

When you enter a number and press [RETURN], that number is assigned to A. You can also use INPUT to enter a character string:

The OPEN statement numbers specify a multitude of available options

```
10 DIM NAME$(20):REM dimension the string
20 PRINT "What is your name";
30 INPUT NAME$:PRINT NAME$;" is a nice name"
```

OPEN/CLOSE/GET

When you use INPUT as shown above, you must press [RETURN] to end the procedure. Sometimes, though, you'll want to get information *without* pressing [RETURN]. If you're choosing items from a menu with a single letter, you'll want the program to jump to the appropriate routine as soon as you press the key for the routine you want. This can be done, but it's a little more complex than using the INPUT statement

First you must **OPEN** a channel (path) to the keyboard for input. Then you need to **GET** each keystroke from the keyboard:

```
10 OPEN #1,4,0,"K:"
20 GET #1,A
30 CLOSE #1
```

The various numbers in the OPEN statement specify the multitude of options available. The computer is told to OPEN channel #1. The 4 means that the channel will be used for receiving information. We can ignore the zero, which is an auxiliary byte. "K:" refers to the keyboard. Issuing the command on line 10 sets up the program to GET a single keystroke from the keyboard.

The GET command in line 20 makes the program stop and wait for a keystroke. As soon as a single key is pressed (except for the [BREAK] key), the program will continue, storing the value of the pressed key in variable A. Notice that the [RETURN] key does not need to be pressed as it does with INPUT.

The **CLOSE** statement in line 30 CLOSEs the channel OPENed in line 20, so that the channel may be used again for other purposes later in the program.

The value of the keystroke returned in variable A could be useful to know, since the program may want to take action depending on which key was pressed. Each key has a different value.

This month's listing demonstrates the concepts presented here and also provides a program that tells you the value for each key on your keyboard. Type in Listing 1, NEWOWN7.BAS, check it with TYPO II and SAVE a copy before you RUN it. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.

Try pressing any keys on the keyboard. Then press combinations of keys including the [CONTROL] key and the [SHIFT] key. Press the inverse video key, at the lower right corner of your keyboard, in combination with other keys. Notice the difference in the values? Experiment and learn these concepts well; they will be important in future columns.

Listing on page 115

THE ST RESOURCE

ANTIC NOVEMBER 1986



CONTENTS

ST Disk Subscribers: For instructions on how to transfer **Antic** ST programs to 3½-inch disk, see ST Help File on Side B of monthly disk. ST programs from previous issues are available in 3½-inch format from the Antic Catalog.


THE ST QUARTERLY
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Volume 1, Number 1
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ATARI
SF314
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1040ST

Reviewed by DAVID PLOTKIN

LDW COMPILED BASIC

Fast, full-featured ST language

The **LDW BASIC Compiler** (LBC) will compile most ST BASIC programs into blazing fast .PRG files of 68000 machine code which are self-contained (no runtime package required). LBC also includes some powerful programming enhancements of ST BASIC.

LBC seems to work well. Within the limits of my home system I was able to compile every ST BASIC program I tried. LBC comes on two single-sided disks containing the compiler, assembler, linker, EMACS editor and all the support files. You first create BASIC source code by using either the provided EMACS editor, a standard word processor such as 1ST Word, or the ST BASIC interpreter that came with your ST.

Next, you use the LDW BASIC overlays to create an assembler source code, which has the extension .S. Then assemble to object code, with a .O extension, and link your file. Finally you modify it to make sure it is relocatable (RELMOD) and create the .PRG file. This all sounds harder than it is. Complete step-by-step instructions are given in the manual.

The manual carefully explains how to set up working disks. You don't actually use the disks included with the package because intermediate files must be written to the disks. Preparation of the working disks depends on whether your system has one disk drive, two drives, or a hard disk. The compile-assemble-link-RELMOD process is cumbersome, but not tough to follow.

The compiler uses drop-down menus, letting you specify various options (such as which drive to use for your source, object, and working files) and turn on such options as integer overflow and stack checking. If you are not yet sure what all these choices mean, don't panic. The assembler and linker should be familiar to ST programmers—they are much like Digital Research's programs in the Atari ST Developer's Package.

ENHANCED POWER

The only BASIC commands not supported by LBC are RESUME NEXT and RESUME 0, which are seldom used. And there's a good reason why they're not supported—which has to do with the previously mentioned enhancements of ST BASIC. LBC lets you write programs without line numbers, using only labels. And RESUME NEXT and RESUME 0 don't make sense without line numbers.

Other BASIC enhancements include support of double precision (sacrificing speed for extra accuracy in calculations) and removal of many of ST BASIC'S limits on string size, number of lines and array size. Array subscript values are also much more flexible.

LBC does have some drawbacks. First, the process of turning a BASIC program into its final form is *very* slow. Several sizeable intermediate files must be written and read from disk during the process—partly because the package creates an intermediate assembler source code listing, which is likely to be useless to BASIC programmers. It would make more sense to compile direct to object code, and the manufacturer says that a future enhancement will provide this option. Compiling a 2.5K BASIC program took about 15 minutes, so you would not want to do too much debugging of the compiled program!

I'd say that the minimum system configuration you'd need to compile reasonably sized files would be two double-sided drives. A hard disk would be even better. Space is a problem because the source files and in-

termediate files must be written to the same disks that some of the LBC programs reside on. This is worsened by the fact that LBC is copy-protected using the "key disk" scheme, which means that you must tie up drive A with the original copy of the program. Compiling involves disk swapping, even on a two-drive system, plus exiting to the GEM desktop and rerunning a batch file. You can't just walk away for 15 minutes.

The manual is a strange combination of useful information and gibberish. It's complete, but is difficult to read because of the stilted language. Obviously the manual was translated from another language, and a better job could have been done.

The technical information at the back of the manual is incomprehensible, at least to me. There is also no index, and it is assumed that you know ST BASIC and GEM. On the other hand, the known bugs in ST BASIC are documented in a special section, and the technical support hotline answers your questions quickly.

Logical Design's policy is that you must get a license from them to distribute any *commercial* programs compiled with this product. Their license cost is a sliding scale, depending on the retail price of your compiled software. For a product priced under $100, the fee is $300. However, the company assures me that no license payment is necessary if you use LDW BASIC to compile programs for the public domain, or for other limited uses such as magazine publication.

Despite the long compile time and the disk-intensive process, I can recommend the LDW BASIC Compiler as a serious programming tool. The final code is very fast, and the finished ".PRG" file is quite small as compiled programs go.

LDW BASIC COMPILER
Logical Design Works, Inc.
780 Montague Expressway
San Jose, CA 95131
(408) 435-1445
$69.95

CIRCLE **215** ON READER SERVICE CARD

A-FILER/REPORT WRITER $59.95

If you can click your mouse you can run this Filer/Report Package

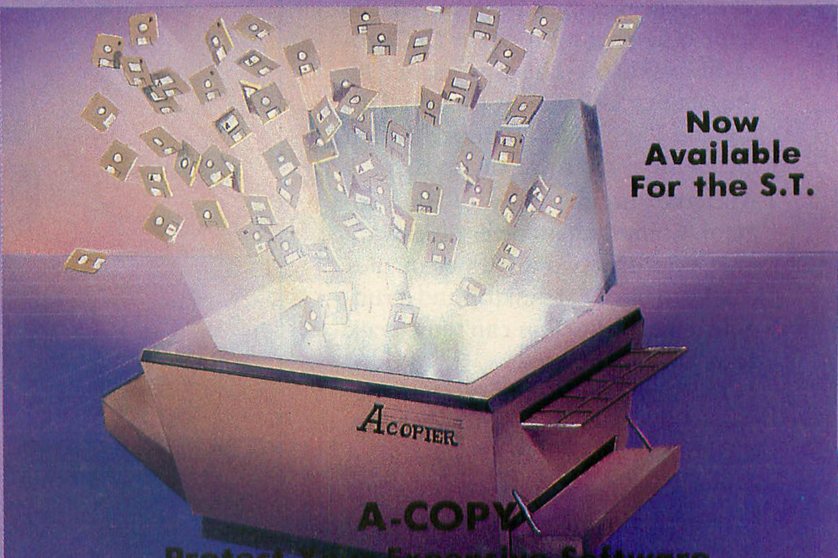
This package is an extremely powerful GEM based mouse driven data base and report writer. The business applications are endless. It has 24 fields, disk based for unlimited number of records, and the ability to do dollar and decimal point calculations. Standard ASCII D-Base and other data base files can be used. The Report Writer can be used for any custom forms like invoices, labels, C.O.D. tags, visa slips, statements and inventory reports, to name a few. It's easy... just grab the field with your mouse, put it where you want it and...click! That is where it will appear on the forms you print.

A-MAILER ST $49.95

At last a Mailing Labeling program that is not only super powerful, but also Mouse driven and easy to use. This program is NOT Ram based so you can have as many records as your disk drive can hold. One of the many powerful features includes the ability to insert into a field text that was a prior record just by hitting the TAB key. Other features include 9 fields, labels for 1, 2, 3 across, ability to custom size your labels and port over D-Base or other standard ASCII mail lists. This program also integrates with the Graphic Label Maker.

GRAPHIC LABEL MAKER ST $39.95

This package will allow you to use graphics when printing your address labels. It even gives you different typestyles. This program will interface with both the A-Mailer and XXXXX Rated Graphic Data Disk for those unusual labels.



A-COPY

Protect Your Expensive Software

A-Copy is an easy to use backup program for your Atari ST. A-Copy copys even your protected programs fast and easy. MegaSoft will be updating this program as often as it is needed to keep A-Copy the best copy program available for the Atari ST. Updates may be requested at any time to registered owners of A-Copy **for only $15.00** plus $3.00 for shipping & handling.

Utilities available for other systems include Keymaster and ToolBox 64/128 for the Commodore 64/128. A-Copy and Amiga Tools for the Amiga.

COMING SOON: KeyMaster for the Apple, Atari ST TOOLS which will include hard drive utilites.

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Parry Sound, Ontario 92A 1P8

RAM DISK AND SPOOLER $39.95

Both the Ram Disk and Spooler are included in one package for one low price. They are both completely transparent to your operation. Ram Disk will even allow you to press the reset button to interrupt a running program and preserve the Ram Disk contents. The Spooler will allow you to continue to use your computer while the printer is in operation.

ST TOOLS $39.95

ST Tools is a complete utility package for the ST. This package is completely GEM based and mouse driven. ST Tools will allow you to do just about anything with the ATARI DISK DRIVE. Some of the options included in this program are: COPY, MOVE, EDIT, RENAME, COMPARE, UNERASE, ERASE, CHANGE STATUS, CHANGE LABEL, FORMAT, and RECOVER ERRORS. Also included are hard drive utilities.

XXXXX RATED GRAPHIC DATA DISK ST XXXXX $29.95

These graphics work with your Print Master or Graphic Label Maker ST. There are over 60 entertaining graphics on this disk. They can be included with anything you can make with Print Master and Graphic Label Maker ST. (labels, letterhead, banners, cards, announcements, and many more)

TELECOMMUNICATIONS PACKAGE $39.95

This package is a total package that includes all the features of the more expensive packages. Options include: spooling, printer dumps, phone book, 300, 1200, 2400 and 9600 baud rate, up/down load, and x-modem with remote access. Included in this package is the Wargames Auto Dialer. Wargames will help find other local computers with modems on them.

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Atari is bringing an ST version of Microsoft Word to the marketplace. **Microsoft Write** is based on the Macintosh version of this best-selling word processor and will make full use of the powerful monochrome and color graphics capabilities of the STs.

Atari Corp., 1196 Borregas Avenue, Sunnyvale, CA 94086. (408) 745-2000. PRESS

CIRCLE **230** ON READER SERVICE CARD

COLOR WRITE & MACROS

Shanner International Corp.'s GEM-based word processor **Color Writer** ($69.95), developed by Maxim Software, gives you full onscreen use of color for text, highlighting, cursor and the Find Color command. Four windows allow you to edit four documents at once, and you can exit the program without specifically having to close each document.

Shanner's **STKey** ($19.95) from Solid Applications Inc. is a memory-resident system that provides support for user-programmable function keys, permitting customization of applications which might not otherwise allow it. With STKey, multiple key sequences, such as those used in spreadsheets and text editors, can be implemented by a single function key.

If you're interested in making MIDI music but don't know where to start, try **Soundwave SW-1**, ($49.95), a MIDI sequencer application developed by Soundwave Software. By connecting a synthesizer to the ST's MIDI ports, you can record in real-time and play back a single track of music up to 15,000 notes long with this entry-level program. Songs can be saved to disk for playback later.

For advanced MIDI users, Soundwave has developed the **Soundwave SW-8** ($179.95), with which any number of synthesizers can be connected to the MIDI port for recording and playback of eight tracks totalling up to 155,000 notes. Individual tracks can be saved and loaded and music can be recorded in real-time or step-time. The user interface of this GEM-based product resembles the front panel of a professional audio tape deck.

MacroDesk ($39.95) is a multi-purpose desk accessory designed to boost your personal productivity and simplify daily operation of your ST. Formerly by Blue Moon, MacroDesk is an entry-level version of Shanner's MacroManager desk accessory. MacroDesk includes an advanced 18-function, 10-memory calculator, an alarm clock/calendar with which you can set events up to 100 years in the future, an electric card file database including search, print and autodial features, and an alarm that can be set to sound once or at the same time every day, week, month or year.

Shanner International Corp., 453 Ravendale Drive, Mountain View, CA 94043. (415) 964-2992. FINAL.

CIRCLE **232** ON READER SERVICE CARD

PAINT, WORD & MIDI

GEM-based **PaintPro** ($49.95), Abacus Software's design and painting package, supports three active windows and has a complete toolkit of functions including free-form sketching, lines, circles, fill, copy, zoom and extensive text capabilities to help you draw graphic and artistic pictures. It works with either monochrome or color systems and can send hard copy to most popular dot-matrix printers.



Word processor for the ST

TextPro ($49.95) is a professional quality word processor featuring multi-column output, automatic indexing, sideways printing (to Epson printers), up to 30 user-definable function keys and a mode for editing C language source programs.

FilePro ($49.95) is a simple, flexible data manager with pull-down menus that let you quickly define your file and enter information through screen templates. FilePro stores data items in different type styles, creates subsets of a file, and supports RAMdisk for high-speed operation. It can handle records up to 64,000 characters in length and can access four files at once.

Finally, for those interested in the fundamentals of MIDI programming, Len Dorfman and Dennis Young, authors of XLEnt Software's ST Music Box, have written **Introduction to MIDI Programming for the Atari ST**, ($19.95) which includes the source listing for a comprehensive MIDI editor, driver and animated player for any Casio CZ-series synthesizers.

Abacus Software, 2201 Kalamazoo S.E., P.O. Box 7211, Grand Rapids, MI 49510. (616) 241-5510. FINAL.

CIRCLE **231** ON READER SERVICE CARD

Activision's **Paintworks** ($69.95), created by Audio Light, is designed with the amateur graphic artist in mind, but offers capabilities sophisticated enough for professionals. This update of N-Vision (**Antic** review, August 1986) lets you create 8-1/2"-by-11" printouts of graphics or isolate individual segments of a larger picture. Paintworks' options include clip art, cut-and-paste, free-hand drawing, a multi-level magnification feature and hundreds of different colors and shades to blend. Paintworks can also be integrated with Activision's Music Studio to create music for "slide shows."

Activision Inc., P.O. Box 7286, Mountain View, CA 94039. (415) 960-0410. FINAL.

CIRCLE **233** ON READER SERVICE CARD

Metacomco's **Menu+** is an easy-to-use programming environment using pull-down menus and the mouse to control programs, thereby avoiding typing in complicated command lines. Users can add their own commands to the menu. And whenever a command is selected from a pull-down menu the full command is displayed and stored in a history window. It can be re-executed later by double-clicking on the appropriate line in the history. Menu+ costs $29.95, but is free with Metacomco's other languages.

Metacomco, 5353E Scotts Valley Drive, Scotts Valley, CA 95066. (408) 438-7201. FINAL.

CIRCLE **235** ON READER SERVICE CARD

Absoft's **AC/FORTRAN** ($195) is a full-featured ANSI-FORTRAN 77 compiler with debugger designed to run mainframe programs downloaded to an Atari ST with little or no modification. This disk-based

continued on next page

compiler requires only 46K of RAM. It supports overlays and virtual arrays, as well as dynamic linking of programs at runtime. It can also interface with C, generate assembler code and support GEM.

Absoft Corp., 4268 N. Woodward, Royal Oaks, MI 48072. (313) 549-7111. FINAL.
CIRCLE **236** ON READER SERVICE CARD

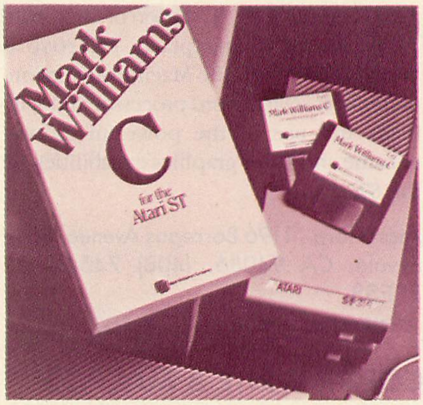
3 INFOCOM ADVENTURES

Who knows? You may find the quadrisexual blond cauliflower of your dreams in Steve Meretzky's **Leather Goddesses of Phobos**, Infocom's first interactive comedy. Phobos is a Martian moon to which you've been abducted by the voluptuous Leather Goddesses, who want to perform their sexual experiments on you in preparation for their forthcoming invasion of Earth, whose inhabitants they plan to turn into their personal love slaves. Your only recourse is to make a special Anti-Leather-Goddesses Machine. But when you see how much fun can be had on Mars, you'll wonder why the Goddesses ever wanted to leave. This game has three levels of varying rudeness, and includes a 3-D comic book with glasses and a scratch-'n'-sniff card.

A bit tamer than that is **Moonmist**, a four-variation game geared to introductory level players age 9 and up. When you identify yourself as either male or female, the characters in the story respond accordingly.

Afterwards, step into an alternate universe where magic and physics coexist, where every atomic explosion that's ever happened is somehow connected. Part Alice in Wonderland and part Twilight Zone, Brian Moriarity's **Trinity** is an odyssey across the borders of reality. You must explore this realm, crisscrossing time and space in your struggle to shape history. Trinity is the first Infocom story to recreate actual locations and events. Its title is taken from the code name of the world's first atomic explosion, which took place in New Mexico in July, 1945.

$39.95 each. Infocom Inc., 125 CambridgePark Drive, Cambridge, MA 02140. (617) 492-6000. FINAL.
CIRCLE **237** ON READER SERVICE CARD



LANGUAGES & UTILITIES

Mark Williams C ($179.95) implements the Kernighan and Ritchie C language and the recent extensions to C under UNIX. This C compiler includes utilities such as make, diff, cmp and sort, an assembler, loader, archiver and an advanced symbolic debugger. The program includes the full-screen editor MicroEMACS and contains a shell that supports I/O redirection, pipes, variable substitutions, path search capabilities and a history utility to execute prior commands.

Mark Williams Company, 1430 W. Wrightwood Avenue, Chicago, IL 60614. (312) 472-6659. FINAL.
CIRCLE **234** ON READER SERVICE CARD

EDUCATIONAL & BETTING

Math Wizard, **Decimal Dungeon** and **Fraction Action** ($39.95 each) from Unicorn Software will help children with their math. Math Wizard (color monitor only) contains four games teaching basic addition, subtraction, multiplication and division in which the player might try to reach a destination or attain a goal. In Decimal Dungeon, you're trapped in the crystal caverns of the dungeon master, and the only way to escape is to correctly answer questions on percent and decimal numbers. In Fraction Action, you can emerge from the mad professor's basement only with the aid of strange keybearers, for whom you must answer questions concerning fractions. Dungeon and Action will work with either monochrome or color monitors.

Unicorn Software, 2950 E. Flamingo Road #B, Las Vegas, NV 89121. (707) 737-8862. FINAL.
CIRCLE **238** ON READER SERVICE CARD

ST New Products

No more playing hit-and-miss with the NFL betting line. Michtron's **Pro Football Wizard** provides both the football bettor and the casual fan with a method of reasonably predicting the outcome of an NFL game. And relax after the Game with **8 Ball**, a one-or-two-player pool game that works on either a color or monochrome system. To help you save up money for these two, try **Your Financial Future**, which gives you charts and plenty of advice on how to save your money.

$39.95 each. MichTron, 576 South Telegraph, Pontiac, MI 48053. (313) 334-5700. FINAL.

CIRCLE **239** ON READER SERVICE CARD

Talisman, a relational database program for the ST, can process and link data from several files and generate reports. It works within GEM with icons, drop-down menus and mouse control. Frequent help windows and prompts aid the novice. The price is $89.95.

Talent Computer Systems, Curran Building, 101 St. James Road, Glasgow G4 0NS, Scotland. PRESS.

CIRCLE **211** ON READER SERVICE CARD

Now you can pack your ST into a suitcase. Port-A-Byte's **Workstation IV** ($268) will accomodate your ST, a monitor, two disk drives, transformers, mouse and disk storage, shielding and fan-cooling all components. Features include a retractable cord, covered power inlet, master switch, surge protector and power indicator light.

Port-A-Byte, 1901 Wilson Avenue S.W., Grand Rapids, MI 49504. (616) 791-9816. FINAL.

CIRCLE **241** ON READER SERVICE CARD

Timeworks Inc., known for their Commodore 64 software, has introduced three ST productivity programs. **Word Writer ST** with Spell Checker, **Swiftcalc ST** with Super Graphics and Sideways, and **Data Manager ST** with Report Writer ($89.95 each).

Word Writer ST is a word processor with an 85,000-word spelling checker and integrated thesaurus. It includes onscreen highlighting, headers and footers, speed keys and pull-down menus. Swiftcalc has high-resolution graphics, including pie charts, line graphs and 3-D bar charts. The Sideways option lets you print extra-wide spreadsheets. Data Manager is a general information storage and retrieval system with graphics and labeling capabilities.

Timeworks Inc., 444 Lake Cook Road, Deerfield, IL 60015. (312) 948-9200. PRESS.

CIRCLE **242** ON READER SERVICE CARD

Make Atari ST cartridges to save RAM, disk space and start-up time. The **Hippo EPROM Burner** reads, burns, verifies, copies and edits memory devices such as ROMs, EPROMS, EEPROMS and electrically erasable RAMs. The $139.95 price includes power supply, hardware and software compatible with both color and monochrome models.

Hippopotamus Software, 985 University Avenue Suite 12, Los Gatos, CA 95030. (408) 395-3190. PRESS.

CIRCLE **207** ON READER SERVICE CARD

Play simulated 18-hole golf on your ST with **Leader Board** ($39.95), featuring lifelike animated 3-D trees, sandtraps, a handicap system and strategy decisions.

Access Software, Inc., #A 2561 S. 1560 West Street, Woods Cross, UT 84087. (801) 298-9077. PRESS.

CIRCLE **214** ON READER SERVICE CARD

The Timekeeper, a plug-in, battery-backed, real-time clock calendar, is the first product for the ST from Navarone Industries. The Timekeeper program automatically gets the time and date from a module plugged into the ST cartridge port while booting. An interesting feature of the module is an extender slot which allows the Timekeeper to remain installed while you use other ST cartridges.

Navarone Industries, 21109 Longeway Road, Suite C, Sonora, CA 95370. (209) 533-8349. FINAL.

CIRCLE **243** ON READER SERVICE CARD

*New ST product notices are compiled from information provided by the products' manufacturers. **Antic** assumes no responsibility for the accuracy of these notices or the performance of the product. Each mention is followed by a code word indicating that, at press time, **Antic** had seen a FINAL marketable version, near-final BETA, earlier ALPHA, incomplete DEMO, or PRESS release.*

Reviewed by BILL MARQUARDT

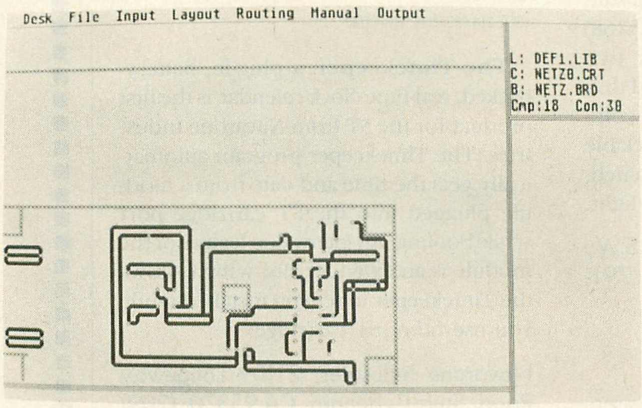
PC BOARD DESIGNER

Makes circuit templates for etching

PCBoard Designer is a computer-assisted design (CAD) tool that creates etchable printed circuit board designs on Epson-compatible printers.

The only real limitation I found with PCBoard is that the finished board can't be larger than 6.3×3.95 inches. This might be insufficient for professional board designers. But it is fine for any printed circuit board templates that would be made by electronics hobbyists like me. The biggest drawback for the hobbyist is the $395 price tag. However, this price has already been heavily discounted by mail order houses.

PCBoard Designer consists of two programs. The first, DEF.PRG, is a GEM application used to create a customized library of component definitions which will later be used to design a board. This program is a little awkward to use. A component's outline is drawn on a grid using a "rubber-band" line, and the connecting pins are placed in their appropriate positions. The problem is that you cannot "lift" the imaginary pen and move it to a new starting point. You can't draw truly curved lines either, but this is less important.



PCBoard Designer work screen.

You probably won't need to use DEF.PRG often, however. The authors have included a definition library containing most of the component icons you will need. Libraries of definitions can be expanded, modified, merged with other libraries and saved to disk. Still, a better drawing routine would be a welcome improvement.

The program disk also contains sample circuit boards and layouts for use with the extensive tutorial section of the well-done manual. The tutorial takes you step-by-step through the creation of a typical circuit board.

The second program, PCB_DESI.PRG, is the actual design program. Like the first, it is a true GEM application and makes intelligent use of the desktop, switching between mouse and keyboard functions whenever appropriate. Your design work is all done from a single window and menu bar. To test the program, I

continued on page 82

EZRAM™ 520

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CIRCLE 067 ON READER SERVICE CARD

520 ST

1 Megabyte

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CIRCLE 025 ON READER SERVICE CARD

PIANO ROLLS PLAYED BY MY ATARI ST

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NOW YOU CAN BRING SUPERSTARS OF THE KEYBOARD INTO YOUR HOME BY USING YOUR ATARI ST COMPUTER AND OUR MIDI MAGIC.

The appearance of the MIDI on home organs and synthesizers opens a whole new future for music. QRS player piano rolls from the 1900 to present day were performed by great artists from Scott Joplin, Fats Waller, and George Gerswin to Liberace, Peter Negro and other contemporary artists. This library of over 10,000 songs are being converted to digital signals and placed on floppy disks which are available for your ST computer.

THE ATARI ST PACKAGES ARE AVAILABLE FOR ONLY $39.95. IT INCLUDES A MIDI INTERFACE AND A SIX SONG SAMPLE DISK WITH CLASSICAL, CONTEMPORARY, SHOW MUSIC, and even RHAPSODY IN BLUE played by the composer GEORGE GERSWIN that you can enjoy with your MIDI equipped keyboard. We also sell CASIO, KORG, KEYBOARD AMPS, and MIDI PRODUCTS for other micro-computers. Call for prices.



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*For Best performance an eight voice polyphonic instrument is required.

CIRCLE 044 ON READER SERVICE CARD

ATTN: PASCAL USERS

MODULA-2

the successor to Pascal

FOR ATARI 520ST

- FULL interface to GEM DOS, AES and VDI
- Smart linker for greatly reduced code size
- Full Screen Editor linked to compiler locates and identifies all errors.
- True native code implementation (Not UCSD p-Code or M-code)
- Sophisticated multi-pass compiler allows forward references and code optimization
- Desktop automates Edit/Compile/Link cycle
- FileSystem, RealInOut, LongInOut, InOut, Strings, Storage, Terminal
- Streams, MathLib0 and all standard modules
- Directory search paths
- Supports real numbers and transcendental functions ie. sin, cos, tan, arctan, exp, ln, log, power, sqrt
- 3d graphics and multi-tasking demos
- CODE statement for assembly code
- 370-page manual
- Installs on Hard disk and RAM disk
- No royalties or copy protection
- Phone and network customer support provided

Pascal and Modula-2 source code are nearly identical. Modula-2 should be thought of as an enhanced superset of Pascal. Professor Niklaus Wirth (the creator of Pascal) designed Modula-2 to replace Pascal.

Added features of Modula-2 not found in Pascal

- CASE has an ELSE and may contain subranges
- Programs may be broken up into Modules for separate compilation
- Machine level interface
  - Bit-wise operators
  - Direct port and Memory access
  - Absolute addressing
  - Interrupt structure
- Dynamic strings that may be any size
- Multi-tasking is supported
- Procedure variables
- Module version control
- Programmer definable scope of objects
- Open array parameters (VAR r: ARRAY OF REALS;)
- Elegant type transfer functions

Ramdisk Benchmarks (secs)	Compile	Link	Execute	Optomized Size
Sieve of Eratosthenes:	6.2	4.3	3.5	2600 bytes
Float	6.4	4.8	8.3	4844 bytes
Calc	5.5	4.2	3.3	2878 bytes
Null program	5.1	3.2	—	2370 bytes

```
MODULE  Sieve;
CONST   Size = 8190;
TYPE    FlagRange = [0..Size];
        FlagSet = SET OF FlagRange;
VAR     Flags: FlagSet;
        i:     FlagRange;
        Prime, k, Count, Iter: CARDINAL;
BEGIN   (*$S-,$R-,$A+ *)
  FOR Iter:= 1 TO 10 DO
    Count:= 0;
    Flags:= FlagSet(); (* empty set *)
    FOR i:= 0 TO Size DO
      IF (i IN Flags) THEN
        Prime:= (i * 2) + 3; k:= i + Prime:
        WHILE k <= Size DO
          INCL (Flags, k);
          k:= k + Prime;
        END;
        Count:= Count + 1:
      END;
    END;
  END;
END Sieve.
```

```
MODULE Float;
FROM MathLib0 IMPORT sin, ln, exp,
                     sqrt, arctan;
VAR x,y: REAL; i: CARDINAL;
BEGIN (*$T-,$A-,$S-*)
  x:= 1.0;
  FOR i:= 1 TO 1000 DO
    y:= sin (x); y:= ln (x); y:= exp (x);
    y:= sqrt (x); y:= arctan (x);
    x:= x + 0.01;
  END;
END float.
```

```
MODULE calc;
VAR a,b,c; REAL; n, i: CARDINAL;
BEGIN (*$T-,$A-,$S-*)
  n:= 5000;
  a:= 2.71828; b:= 3.14159; c:= 1.0;
  FOR i:= I TO n DO
    c:= c*a; c:= c*b; c:= c/a; c:= c/b;
  END;
END calc.
```

Product History

The TDI Modula-2 compiler has been running on the Pinnacle supermicro (Aug. '84), Amiga (Jan. '86) and will soon appear on the Macintosh and UNIX in the 4th Qtr. '86.

Regular Version $79.95 Developer's Version $149.95 Commercial Version $299.95

The regular version contains all the features listed above. The developer's version supplies an extra diskette containing a symbol file decoder – link and load file disassemblers – a source file cross referencer – symbolic debugger – high level Windows library Module – Ramdisk and Print Spooler source files – Resource Compiler. The commercial version contains all of the Atari module source files.

Other Modula-2 Products

Kermit	– Contains full source plus $15 connect time to Compuserve.	$29.95
Examples	– Many Modula-2 example programs to show advanced programming techniques	$24.95
GRID	– Sophisticated multi-key file access method with over 30 procedures to access variable length records.	$49.95

TDI SOFTWARE, INC.

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REGENT WORD II:
GEM Word Processor with Spelling Checker

Power through any word processing needs with Regent Word II. Regent Word II makes full use of the GEM system, so editing is powerful and easy! As text is typed Regent Word II reformats the document on the screen to show exactly what will be printed. Bold, Superscripted, Subscripted, Italic and Underlined text are displayed while editing. A 30,000 word Spelling Checker is built in. Insert or delete words — up to 100,000 — in Regent Word II's spelling dictionary with the click of a mouse button! Regent Word II "mail-merges" with Regent Base for instant form letters. On-line Help Menus and over fifteen printer drivers are built in.

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Plus $500 worth of Batteries Included ST software

Three Runner-Up Prizes Antic 1-Year Disk Subscriptions

Also, any entries (including prizewinners) accepted by **Antic** Magazine will be paid at our standard authors' rate, upon publication.

HOW TO WIN The mail and online email coming into **Antic** leaves little doubt that the type-in programs most wanted by our readers are real-world practical applications for the Atari 8-bit computers. This kind of software is admittedly not easy to design or program. So we decided it's time to raise the ante with the **Antic** 8-Bit Practical Applications Competition.

We are looking for the most powerful, versatile, easy-to-operate programs that perform useful jobs in the real world. The more uses for your software, the better. For example, a stuffed-animal database for taxidermists would probably be considered too specialized by the magazine's judges—no matter how excellently it is programmed.

The winning software must be user-friendly, most likely menu-driven wherever possible. Users should not need programming knowledge in order to successfully operate the application programs.

Please note that some of the other popular Atari program categories—such as utility routines that add power when inserted into your own programs—cannot properly be considered applications. Practical application programs should be complete, stand-alone software that does an entire user-controlled job from start to finish. For example, a drawing or painting program would be a practical application—a colorful graphics demo would not!

TECHNICAL RULES Programs must run on the Atari 800, 800XL and 65XE models and require no more than 48K memory. However, programs that *also* take advantage of the extra memory in the 130XE will be given preference.

Programs must be written in standard renumberable Atari BASIC or MAC/65 assembly language, under a disk operating system compatible with Atari DOS 2 or 2.5. Program listings cannot be larger than 150 sectors of a single-density disk.

Thorough error-trapping is very important. Your program should not crash every time a user accidentally presses the wrong key. And please do not include authors' copyright statements in your listing.

JUNE 15, 1987 All entries in the **Antic** 8-Bit Practical Applications Competition must be received by June 15, 1987. Winners will be announced in the November, 1987 issue of **Antic**. Judges' decisions are final.

Entries—programs and accompanying articles—should be submitted on disk *and* in printout. Entries will be returned only if the author provides a stamped, self-addressed envelope.

Send entries to:
Practical Applications Competition
Antic Magazine
524 Second Street
San Francisco, CA 94107

All 8-bit practical application programs accepted for publication by **Antic** between November 1, 1986 and June 15, 1987 will also be automatically evaluated as potential prizewinners in the contest.

Program by PAUL PRATT and STEPHEN EVERMAN
Article by PATRICK BASS

ST BASIC HANGMAN

Public domain classic meets mouse

At school, you probably played some version of Hangman during class—at least until the teacher caught you at it. Remember that game where you tried to guess words, one letter at a time, before your wrong guesses "hung" a stick-figure man? A thinly disguised version of Hangman is popular on television today—under the name "Wheel of Fortune."

Now you can play Hangman on your Atari 520ST. Type in Listing 1, HANGMAN.BAS, and SAVE a copy to disk before you RUN it.

NOTE: We recommend that you type in the program with a word processor (I use 1ST-Word) and then LOAD the resulting text file into ST BASIC. We have found this to be a lot easier than struggling with the bare-bones editor included with the current version of ST BASIC. For example, if you insist on using the ST BASIC editor for this particular listing, you will lose all of the indentations we included to help set off the loops.

RUNNING ON

When you RUN the program, it will first **full** and clear the output window, then place two rectangles and fill patterns on the screen. Titles are printed, scores and averages appear. Finally you see a series of dashes which represent the unknown word, and the alphabet is displayed at the bottom of the screen.

Using the mouse, click the letter of the alphabet that is your guess. The letter will turn red to show it has been selected. (Remember, we told you this listing works only on STs with color monitors.) The program checks for a match-up with any letters from the unknown word. If a match is found, the unknown word is updated on screen with the correctly guessed letter, and the loop continues.

> If you're out of guesses, you'll hear 12 boops. If you're right, 12 happy dings chime out.

If you run out of guesses, you'll hear 12 boops and the correct word will appear. The next word for guessing appears on the screen and the game continues. But if you manage to guess the correct word, 12 happy dings chime out, your score is increased, and the next word is displayed.

PROGRAM TAKE-APART

Lines 1000-1050 contain the title of the program. Lines 1060-1150 comprise the entire MAIN loop of the game, which first INITIALIZEs the game, then **while not finished**, it will **gosub Hangman**. Eventually you decide that the game will be **finished** by clicking the *right-hand* mouse button.

Lines 1170-1300 contain the loop for Hangman itself. INITIALIZE sets **playing** to TRUE so Hangman will start the first time through. The first call inside the loop is a **gemsys()** call to GRAFMKSTATE, which returns the position of the mouse and the state of the mouse buttons. The current mouse location gets put into PLACE and the mouse button state gets put into MOUSE. The following logic determines if the mouse is in a playable position—If INRANGE and GOODPRESS—and if so calls MAKEAGUESS.

GUESSTIMATE

Lines 1330-1460 consist of MAKEAGUESS, which determines if the letter pointed to and clicked on matches any of the letters in the unknown word. If so, CORRECT is

continued on next page

called, otherwise BADGUESS is called and we start with the next letter. However, if all of the guesses are used up, we RESTART the program, and branch back to the top.

Lines 1640-1770 make up WORDGET, which is the routine to select a new word to randomly pull out of WORDSDATUM, which starts at line 2450. Right now there are 182 words in the WORDSDATUM table. You can substitute your own words or put in a different amount of words. But if you do change the total number of words in the table, be sure to put the new number in place of number 183 in line 1650.

STARTING OVER

RESTART contains information needed to re-start another game. When the previous game is finished, it makes a call here to reset variables and re-draw the screen. INITIALIZE contains the information we need to start the game from power-up. Starting at line 2400 is BOXDATUM, which contains the rectangle coordinates.

Paul Pratt and Stephen Everman of Hayward, California have written an ST Mastermind-type game that will appear in a future issue. They are currently working on a "Star Trek" game for the ST ***Resource!***

Listing on page 116

Yes, that's right, a Hangman game in ST BASIC. In coming months, ST Resource will be publishing other ST conversions of classic public domain software. What better way to demonstrate a wide variety of programming effects on the ST? We plan to publish only ST Classics that are enhanced to take advantage of the ST's outstanding graphics and friendly GEM interface. For example, we like the way this Hangman makes selections with the mouse pointer and is a nice, clean example of GEM programming standards. However, please note that the current program only works with color *monitors.*—ANTIC ED

PC BOARD DESIGNER
continued from page 74

designed a printed circuit board template based on the WEFAX interface circuit from the September 1986 **Antic**. (*Figure 1.*)

After becoming familiar with the program, creating the template was simple. I designed two component definitions, added them to the existing library and loaded the expanded library into the design program. Then I created a component list, where each item is given a name (such as C1), a component type from the library and an optional remark. Pressing the [HELP] key displays a list of all components in the library. The manual includes pictures of all the existing definitions, which is very helpful.

Next, I typed in the connections, which is the most tedious and time-consuming part of the process. You will probably have to work from a hand-drawn diagram to accomplish this accurately. But then the real fun begins. You'll really begin to appreciate PCBoard when you see how easy it is to rearrange the components on the screen. You can even rotate the components 90 degrees at a time by pressing the right mouse button. Rubber-band lines connect each component, giving you an idea of how well the layout is set up.

After you are satisfied with the arrangement, all you do is click on the routing option from the menu bar and select auto-routing. Within seconds an etch pattern appears on the screen. Sending this to your printer produces a double-size image which you must then reduce to the correct size on a copying machine. The result is an actual-size template suitable for photo etching!

Numerous features are supported. You can print out silkscreen diagrams of the component placements, add wide traces, specify double-sided boards and make varied adjustments to the layout.

Abacus has a generous backup policy. Upon receipt of your registration card, you will automatically be sent a backup disk. If you later need another, return your bad disk and the company will send you a new backup free of charge. This should ensure that you'll always have a working copy.

PCBoard Designer requires a 1040ST or a 520ST with TOS in ROM. You will also need a monochrome monitor and an Epson-compatible printer. The program disks can be duplicated, but the copies are not fully functional—they only accept 14 component entries, which is not enough to do anything useful. The bad thing about this copy-protection system is that you cannot transfer the program to a hard disk. The original master disk must always be in drive A.

I was thoroughly impressed by PCBoard Designer. It is a powerful, multi-featured design tool that can be easily learned and used.

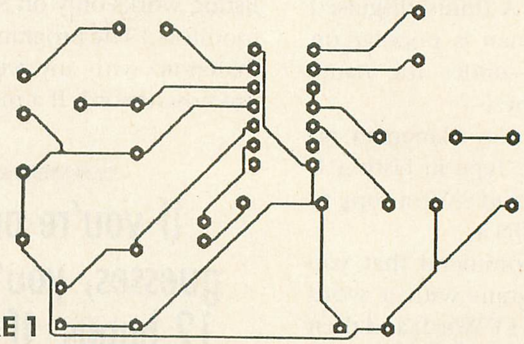


FIGURE 1

PCBoard layout of WEFAX interface circuit (Antic, September 1986) printed on Epson FX-85.

PCBoard DESIGNER
Abacus Software, Inc.
P.O. Box 7219
Grand Rapids, MI 49510
(616) 241-5510
$395

Reviewed by MICHAEL NOWICKI

GRAPHIC ARTIST

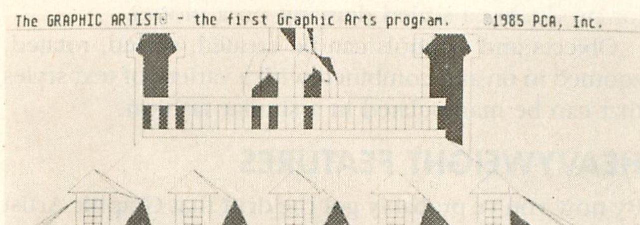
IBM-style AutoCAD plus desktop publishing

PCA's **Graphic Artist** ($199) is a very sophisticated program that manipulates graphics and text for sending to a plotter, laser printer or dot-matrix printer. Graphic Artist has professional-level ambitions in computer-aided design (CAD), business graphics and desktop publishing. You can create some great onscreen graphics with Graphic Artist, but the program's real purpose is to print its end results on paper.

With a dot-matrix printer you have the standard what-you-see-onscreen-is-what-you-get-on-paper. But with a plotter or laser printer, what you get on paper is much better than what's on the screen. The video image is essentially only a rough mock-up of your eventual hard copy from laser or plotter.

Minimum system configuration is a 520ST with TOS in RAM, single-sided drive, and a dot-matrix printer. But you can use either a color or monochrome monitor. A color monitor in medium resolution lets you color the different overlays for better representation. A monochrome monitor still lets you view all the layers, but they are all the same color.

Graphic Artist has a 400-page manual that lies flat without hassles. Documentation quality equals that of high-priced turnkey CAD systems. It's a guidebook to the program, not a tutorial on traditional drafting concepts, graphic arts technique or typesetting. It's simply written and easy to understand, with at least one example of the use of each command or function. You also get a manual



for building a driver to run just about any printer or plotter.

Two disks, not copy-protected, contain the program, fonts and data files. A demo disk has numerous examples of drawings, floor plans and an amazing map that starts out with a satellite view of the East Coast and zooms in gradually on the lettering of a billboard in Washington, D.C.

AUTOCAD SET-UP

If you're familiar with CAD software, such as AutoCAD for the IBM PC, you'll feel right at home with Graphic Artist. The top portion of the screen is reserved for the

continued on next page

current graphic cursor X-Y location plus the available files and fonts that can be loaded.

About 85 percent of the screen is available for viewing the work area. But the Pan command can stretch this to almost unlimited size, while the Zoom feature can magnify or condense a portion with no loss of graphic detail onscreen, or of numerical detail in the "spreadsheet."

A spreadsheet grid is maintained within memory to record all your interactions while creating a drawing. The spreadsheet cell locations can be jockeyed around with various cut-and-paste, copy and computation techniques using relative and absolute variables, which are very handy in dealing with big clumps of design data.

Wisely, GEM pull-down menus are not used in Graphic Artist, as they would only obscure the work area. Instead, the 60 or so commands scroll across the bottom of the screen, controlled by the arrow keys. Extensive help boxes pop up whenever you request them.

From almost anywhere in the program, you can complete the command sequence or back out altogether. Once you put a graphic primitive or text on the screen, though, it's not easy to undo. The implementation of the [UNDO] key to delete the last command would be a nice time-saving feature to have. But as it is, you have to "cut" the mistake from the spreadsheet.

Via the Grid and Scale commands any unit of measurement such as inches, yards, or microns can be defined within a graphic "world." A grid based upon this unit system can be turned on or off for reference. This is important for accurately describing the objects being drawn and for producing a scaled drawing on a plotter.

Objects and symbols can be created, scaled, rotated, zoomed in on and combined with a variety of text styles that can be manipulated in a similar fashion.

HEAVYWEIGHT FEATURES

By now you've probably got the drift that Graphic Artist is not a lightweight drawing program. Let's take a closer look at the CAD portion.

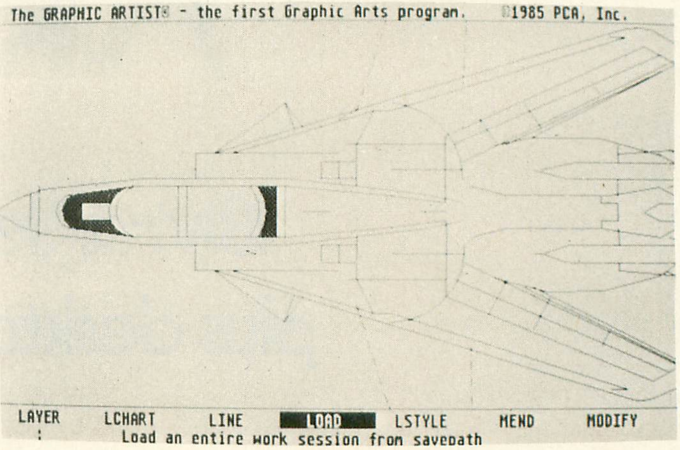
Your background drawing surface can be set to any one of four colors in medium-res or one of two colors in high-res. You actually draw on any of the 256 overlays, which are like clear acetate sheets superimposed over the background, and over each other, with exact registration. Each overlay can be defined as a unique plotter pen color, while onscreen you can use the maximum number of colors available in that resolution and mix ST palette colors from within Graphic Artist.

For example, if you are designing a printed circuit board with Graphic Artist, each side or layer can be an overlay, with additional overlays used for legends, pad layout without traces, mounting screw hole layouts, you name it. This lets you use the same drawing file data to rapidly create a fabrication drawing for the boys in the shop, a pictorial for a client or for advertising, etc. Each drawing would contain the same basic information but would include or exclude details, depending on its purpose.

You first determine a layer to draw on, select a graphic primitive and determine its dimensions using the mouse pointer, numeric keypad entry or by accessing spreadsheet data already on disk or in memory. Redrawing standard components and arranging them into a new design is eliminated by calling them up from a user-created library and putting them into the new design on the same or different scale.

ABSENCES

Some expected CAD features, however, are conspicuous by their absence. There are only six line types, with no way to define custom types, even though there are many



others that are both necessary and standard in professional CAD systems. There is no provision for changing the line weight (thickness). Using the overlays for these can be a way around this for plotter output, but it's cumbersome.

GEM has numerous predefined fill-patterns within VDI, many of which are ideal for architectural design. But few really useful patterns for CAD use can be called up from within Graphic Artist. You're stuck with about 10, including the common hatch types useful for sectional drawings and shading.

Apparently there's no way to draw precise line angles — not even the common ones like 30, 45 and 60 degrees. One of my clients has me draw large, complex wire-bending jigs with as many as 20 oddball angles that must be displayed for shop workers. I could not produce this job using Graphic Artist.

These omissions are serious, reducing the possibility of using this program professionally. You could try creating lines of varying thickness as symbols and patching them together on screen, but that takes the time and effort that a CAD system is supposed to eliminate.

Other bugs inhabit the CAD portion of Graphic Artist, some minor, some serious. If you forget to turn off the grid before filling an outlined object or area, the fill-pattern leaks out through the grid dots on the object edge and bleeds through, ruining your drawing. And when you cut an object or symbol into the buffer, what you end up pasting is not always what you cut. This seems to happen

mostly when the screen-part being cut is filled with a pattern.

BUSINESS GRAPHICS

The business graphics functions include bar charts, pie charts and exploded pie charts. The data for these is extracted from the speadsheet by the user, following on-screen prompts to specify the range of data cells along with the size of the chart and legends desired. Only six data fields may be graphed, which hardly seems enough for even casual data analysis to be charted.

The program automatically selects fill-patterns for each bar or pie slice, eliminating your option to customize charts for your own taste. Although it's not mentioned in the manual, you can get around this by changing an existing chart in the spreadsheet, changing the fill-pattern and then redrawing the chart.

Overlays can be used to produce charts for multi-color output on the screen and/or the plotter. Again the number of fill-patterns available is limited and you can't create custom fill-patterns. You can laboriously hand-create a sheet of custom fill-patterns point-by-point and save them to your ever-growing library of symbols, but you still can't tell Graphic Artist to use them in the business charts. You can fudge a little and simply create your own charts and graphs by hand, but this again defeats the program's purpose.

TEXT PROCESSING

The last portion of Graphic Artist is for creating formatted text for your CAD designs, business charts and desktop publishing endeavors. The program lets you enter text, edit it, copy blocks and move them around, and define several parameters such as rotation, justification, boldface, etc. All text typed in is entered into the spreadsheet cells line by line. The maximum line length is 60 characters, which doesn't seem like enough if you plan to use small type, as with footnotes or legal forms with the proverbial fine print.

Eight fonts are supplied, with a font editor for creating your own, or you can have PCA develop them for you for a reasonable (though unspecified) fee. Only one font can be contained in memory, so if you must redraw a design with multiple fonts, the program must load each font change before laying it on the screen. This is where a RAM-disk is a real time saver.

Of the three business applications, desktop publishing has the fewest bugs and conflicts between the documentation and actual program operation.

I used several plotters, including the HP model that the driver was designed for, with mostly good results. A few unpredictable things did occur, such as the plotter apparently losing track of where it was and laying portions of designs in the wrong places. (This only happened with drawings over 15 layers.)

Four drivers for Epson-compatible dot-matrix printers that employ varying dot density modes are supplied. A

continued on next page

driver for just about any dot-matrix printer can be constructed easily with the supplied driver editor program. Canon laser printers can be run using supplied drivers, or you can create your own using the same driver editor for the dot-matrix models.

To get a printout of your design you must first make a print file to be compiled by a separate printing program. Depending on complexity of the drawing, this process can take from less than a minute to over an hour.

I found this version of Graphic Artist (version 1.02) too unpredictable, slow and limited for my professional needs. According to PCA, version 2.0 is due out in September and will take care of many of the problems mentioned here. I hope to confirm this with a follow-up review later this year. In the meantime, I consider the present version of Graphic Artist to be excellent for training newcomers in 2-D CAD operation.

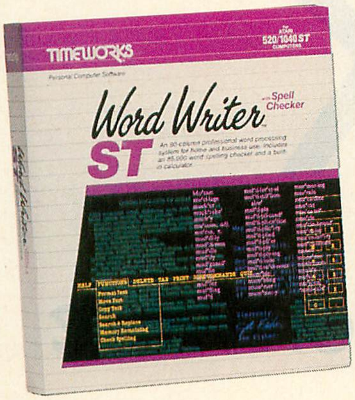
Michael Nowicki is a professional CAD drafter, graphic artist and programmer, based in San Jose.

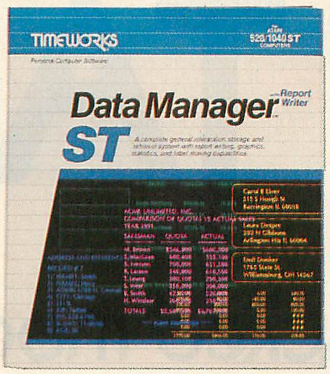
GRAPHIC ARTIST
PCA
2002 McAuliffe Drive
Rockville, MD 20851
(301) 340-8398
$199

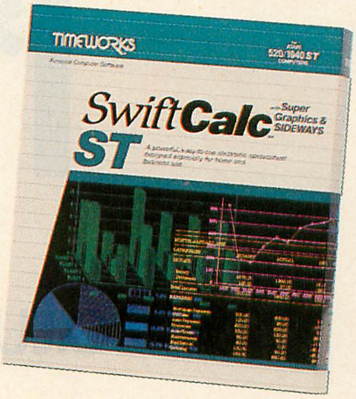
CIRCLE 216 ON READER SERVICE CARD

IF YOU CAN FIND A BETTER ATARI ST PROGRAM WE'LL BUY IT FOR YOU!*

Full GEM interfacing, convenient Quick Keys, and many other unique features of our own.







WORD WRITER ST with Spell Checker

A full-featured, professional word processing system for home and business use. You get:

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- **An additional 85,000 word, built-in Spell Checker** that checks your entire document – at your command!
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- **An Outline Processor** that quickly organizes notes, facts, and ideas in convenient outline format.
- Every other feature you'll need for everyday word processing, plus most of the features found in more expensive programs.

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- **A Label Maker** that prints your important information onto all types of labels.

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SWIFTCALC ST with Sideways

A state-of-the-art spreadsheet for home and business use. You get:

- **8192 rows and 256 columns provide up to 2,048,000 cells** (locations) in which to place information.
- **Super Graphics** graphically display and print out business information using pie charts, bar charts, line plots, point plots, hi-lo-close stock price plots, and more.
- **Windows** allow you to work on two sections of your spreadsheet simultaneously.
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CIRCLE 069 ON READER SERVICE CARD

Reviewed by ERIC CLAUSEN

I*S TALK

BI's feature-packed modem software

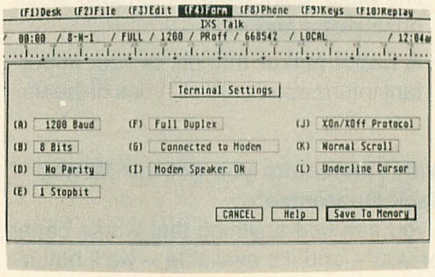
I*S Talk is a GEM-based modem communications package offering a plethora of features.

There's a capture buffer with over 400K capacity and a number of powerful editing capabilities, a 50,000-word spelling checker, multiple file transfer protocols, input/output filtering, automatic logging on at boot-up, instant replays of online session commands, access to many TOS functions, macros and a message compose window.

Almost all these functions can be controlled by clicking on drop-down menus. A complete set of keyboard commands is also available.

Batteries Included intended I*S Talk to be a full-featured telecommunications package for all levels of users and they generally succeed at this. The impressively packaged program kicks off BI's new "serious" business software line, Integral Solutions. BI has also done ST owners the courtesy of selling I*S Talk at an affordable price and without copy protection. The manual is well written, although suffering from a few minor typos and omissions.

I*S Talk's capture buffer, which toggles on and off, will be about 580K on an Atari 1040ST. On a 520ST you'll have around 425K minus any desk accessories. Although it was not noted in the manual, some desk accessory programs such as Solapack seem to interfere with proper functioning of I*S



Talk. The program's 50,000-word spell-checking dictionary can be brought into memory when needed and then erased, or saved with your additions.

One great thing about I*S Talk is the variety of buffer content manipulations available. Buffer text can be routed to a disk file on any of four possible drives. Text files can be routed to the modem, the buffer, the printer or the screen. The user can also perform cut-and-paste and text search functions.

Because there is no horizontal scrolling available in the buffer, I*S Talk allows toggling the vertical scroll bar on and off. This is necessary because the scroll bar obscures the last three characters when working with 80-column text. But whenever the scroll bar is switched on or off, the cursor drops to the bottom of the buffer and the last line of the previous screen becomes the last line of the buffer. This is especially annoying when you've got a large document in the buffer.

Error-free file transmissions are accomplished by XMODEM with CRC or checksum protocols, which are selected automatically. I*S Talk also incorporates Atari Binary Transfer Format (ABTF). This is not another file transfer protocol, but an additional error correction step used in conjunction with I*S Talk's XMODEM. You must find a host which supports this feature before you can use it. ABTF was originally proposed

by Russ Wetmore and the technical specifications can be found in a text file on Compuserve's SIG*Atari ST section. For some reason, there is no mention of ABTF in the I*S Talk manual.

I had trouble with XMODEM file transfers while logged onto GEnie with I*S Talk. When using host-specified terminal parameters (seven-bit word and half duplex) I*S Talk wouldn't allow XMODEM transfers and I had to manually abort. No error messages and no timeouts were reported. I had no problem with I*S Talk on any other system.

FEATURES GALORE

I*S Talk can filter incoming and outgoing files. Input filtering can include suppression of control characters, stripping off the high bit and adding line feeds. Output filtering control is even more extensive and should allow connection to most other systems. Don't expect to be able to log onto ATASCII boards, but most ST users will find this a small inconvenience.

I*S Talk allows the user to obtain disk directories, format for single- and double-sided disks, and erase files. Graphic screen dumps are possible from within I*S Talk if you have a suitable dot matrix printer. Complete control over important RS-232 settings is provided. Baud rates from 110 to 9600 are possible. In addition, cursor shape and modem speaker can be toggled, and normal/medium/smooth scrolling are available. However, the smooth scroll is too slow to be truly practical.

The compose window holds in-progress messages up to 200 characters long. These don't get sent online until you press [RETURN]. All command characters will still be sent immediately to provide some system control while composing text.

I*S Talk allows the user to easily create disk files called "logon scripts," which contain all necessary information for logging onto information services automatically. The filenames become part of a pull-down menu and are activated simply by clicking on the desired name. This feature also lets the user input the hourly charge of the service and gives a running cash clock in the status line. I*S Talk even accounts evening/weekend rate changes if you enter the correct time from the desktop.

You can set I*S Talk to automatically run one of these logon scripts immediately when the program is booted. Up to 25 keyboard macros can be stored.

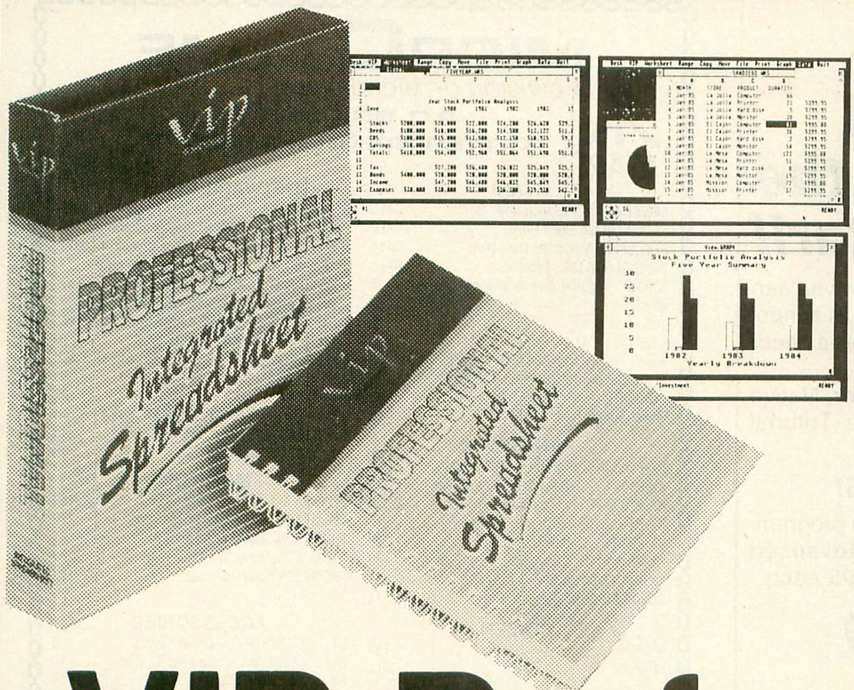
I*S Talk offers an interesting and useful feature called replay, which lets you record long strings of commands, store them and replay them again with a push of a button. The power of this feature lies in its ability to record every desired mouse movement, button press, keystroke and pause. I*S Talk can then replay these sequences at your command. When you combine this feature with auto-logon capability, you have powerful control over your online sessions.

These features make it possible for experienced users to configure I*S Talk as an almost completely automated tool for less experienced users. This could save a great deal of train ing time in a business environment.

Unfortunately, a few of I*S Talk's functions still have rough edges, leaving version 1.00 of the package with a slightly unfinished feel. I'm sure I*S Talk will have its following. Batteries Included just needs to spend a little extra time straightening out future revisions of I*S Talk and they'll add another undisputed winner to their long string.

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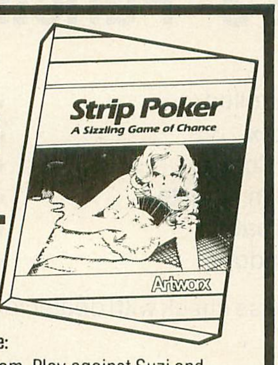
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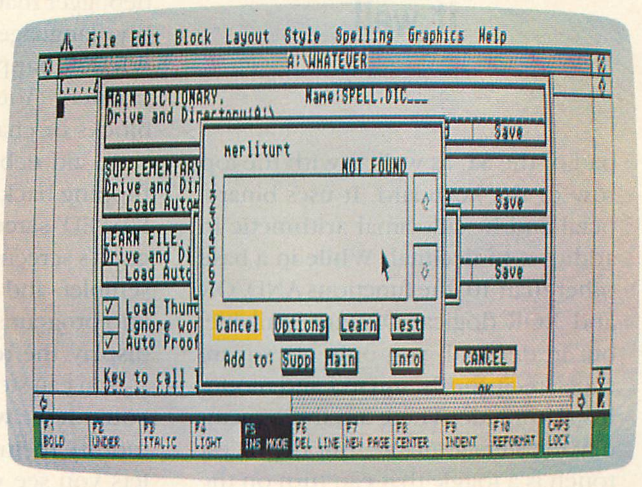
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CIRCLE **209** ON READER SERVICE CARD

Reviewed by Steven DiMeo

Batteries Included programmer Mark Skapinker must know that the word "astonish" comes from the Latin *tonare*, which means "to thunder," because his spell-checking writers' aid **Thunder!** truly does astonish with its capabilities.

Thunder! fits a dictionary of 50,000 words into only 88K of memory—as the clear and concise documentation understates it, "no mean feat!" The program even includes most comparative and superlative adjectival (yes, even that word's in the dictionary) forms like "higher" and "highest."



In addition, the main dictionary can be increased another 2,000 words—though once the words are added to the main dictionary, they can never be erased. More flexibility is built into the "supplementary dictionary" where about 200 special words can be added or subtracted.

Furthermore, Thunder! features a "learn dictionary" in which the program "learns" that it should replace one particular word with another—up to 100 word pairs. This can be a word that the writer commonly misspells. For instance, Thunder! can be taught to replace "recieve" with "receive." Or a shorthand term or acronym can be fully spelled out in every instance in the final document. Thunder! can interpret BI, for example, as Batteries Included.

Another attractive feature is that Thunder! is compatible not only with other Batteries Included software such as the forthcoming PaperClip Elite, but also with GEM-based applications like HabaWriter, Regent Base, Flash and 1ST Word.

As we might expect from Batteries Included, this program is also quite user-friendly. All commands require only the clicking of the mouse on easily readable menus. Thunder! can be loaded as an accessory in the root directory with the booted operating system before beginning the document (THUNDER.ACC) or as a standalone program for correcting files already completed (THUNDER.PRG).

In either case, the user accesses a menu that can examine options with an hourglass-shaped cursor or begin checking the spelling. Under "Options," Thunder! can be ordered to check or skip words beginning with capital letters. In the spell-checking mode, then, it scrolls through the selected file for misspellings it can verify from its main dictionary (though the text in the window looks disconcertingly unusual as the program scans it). When it stops at such a word, it will offer alternative spellings. All the user needs to do is click the mouse on the correct choice—or type in another alternative in the blanks provided. When Thunder! finds a word not in its dictionaries, the user may order it to "Ignore Repeats," move on to the "Next"—or add the word to the main or supplementary dictionary with another click of the mouse.

Another added bonus to this program: It can automatically calculate the number of words in a document—*and* determine the clarity of the manuscript. Although PaperClip itself can count words, other word-processing programs haven't been able to do so, until now a tedious but necessary task for writers and editors alike.

And Thunder! even determines Gunning's Fog Index and Flesch's Readability Index, two methods based upon counting a document's words and syllables into formulas which suggest the approximate grade of schooling required to understand the article. Thanks to Thunder! I know that this review, according to both indexes, requires a 10th-grade or 11th-grade education.

This program, like any, however, does have a few drawbacks. For one thing, who would really like to turn on Thunder! as an accessory and have it beep at every typo? That might be acceptable for short documents like letters, but certainly not for long ones—even though the beep can be disengaged.

And in the spell-checking mode Thunder! can "Ignore Repeats" of no more than 20 words. Once again, that's acceptable in short documents, but if the writer is involved in a long and somewhat technical article that requires special jargon or proper names or terms that cannot be overlooked in proofing, it can be a nuisance when the spell checker eventually has to stop at every word too specialized to be placed in either of the program's dictionaries.

Another peculiarity is that Thunder! interprets even double dashes as hyphens—and therefore pauses at any word connected by dashes. So remember to place one space before

continued on next page

and after the dashes.

More of a drawback is that the main dictionary doesn't include contractions. If the writer normally uses them a lot, he'll find that the 200-word supplementary dictionary ends up consisting almost entirely of contractions.

Users should also be aware that the new 1.06 version of 1st Word will *not* fit on a single-sided disk with Thunder! In this case, it can most easily be used as a standalone program on the same double-sided disk with the documents to be examined.

Finally, prospective buyers should realize that, even though this program's dictionary is larger than others, the spelling checker will catch only the most egregious errors, not *all* of them. It would be extremely difficult for any spelling checker program, for example, to pause at words misspelled in context. Thunder! thinks "to" looks correct, even if "too" was intended, and "studies" looks correct even if the writer meant "studied."

Like the computer itself, then, Thunder! is merely a tool—mostly for those who lack confidence in their spelling. It minimizes *instances* of misspellings but doesn't really diminish the need for proofreading. A more indispensible writing tool would be the thesaurus programs possible in the near future. But no computer program will ever substitute for plain old-fashioned human learning.

CORNERMAN, KISSED

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CIRCLE **202** ON READER SERVICE CARD

Reviewed by Sol Guber

Cornerman ($49.95), a desktop utility *a la* Borland's SideKick, is readily usable by any ST owner. It does a little bit of everything and does it well. Cornerman's eight functions include a calculator, notepad, phonebook with auto-dialer, ASCII table, 15-square puzzle and real-time clock.

KISSED ($39.95), another new package from prolific MichTron, is a highly specialized ST debugging tool—much like the IBM symbolic debugger—that takes much effort to use properly.

Cornerman's 16-digit calculator works with the mouse and the 10-key

Cornerman does a little of everything and does it well

pad of the ST, as well as with the top row of the keyboard. It uses binary, octal and hexadecimal arithmetic in addition to decimal. While in a base other than 10, the functions AND, OR and XOR (logical OR) are available, but in decimal, you only get square roots, reciprocals, squares and modulus arithmetic. There are three memory registers available. But the nicest touch is a toggle that can turn on the printer if you need a record of your calculations.

The notepad holds 32,767 messages, all stamped with the date and time. Each note is seven lines of 32 characters apiece, but can be continued on separate "note sheets." You can save, delete, replace or print the notes.

The phonebook has two functions to be used with a modem (which must be as Hayes-compatible as possible). There's an automatic dialer with 32,767 pages available for calling either a person or another computer. A phone log is then activated automatically to monitor the call, keep track of how much time you are spending online and let you leave yourself messages.

The analog clock on the screen updates time every ten seconds. The "fuller" command in the upper right-hand corner can be used to expand the clock to fill the screen. This lets the clock be used to lock out unauthorized users. During the setup phase of Cornerman, you can enter a password for removing the full clock from the screen.

To do all this, Cornerman is over 100K long. It needs six additional disk files to store the information. The disk is not copy-protected and is very easy to transfer to a hard disk. There is a complete manual that explains all the functions in detail.

KISSED is a self-relocatable 12K debugger that lets you load an assembly language program and watch what's happening to all of the registers. You can change memory blocks or change values in memory.

To aid debugging, KISSED allows flipping back and forth between the KISSED screen and the target program's screens. There is a small disassembler, and breakpoints can be put into programs to make them stop and display the registers.

You can store old register values so you can see what happens when you modify them, and the printer toggle lets you see what you have done in KISSED. However, its mini-assembler only allows for temporary patches since there is no way to write the program back to the disk.

KISSED is a fine precision tool that takes long practice to use to your advantage. It assumes that you know everything about 68000 registers and debugging an assembly language program. It also assumes you have the patience to go through large amounts of assembly code step-by-step. But it does provide a controlled testing environment so that you can monitor the execution of a program to be debugged. You can do quick repair work on a problem and then continue testing without reassembly of the total code.

KISSED's 44-page manual lists and

describes the 38 available functions, but does not explain the principles of debugging. KISSED seems to work well and is difficult to crash. It's not for everyone. But if you already know how to use a debugger, this is a good, solid program.

HACKER II: DOOMSDAY PAPERS

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CIRCLE **203** ON READER SERVICE CARD

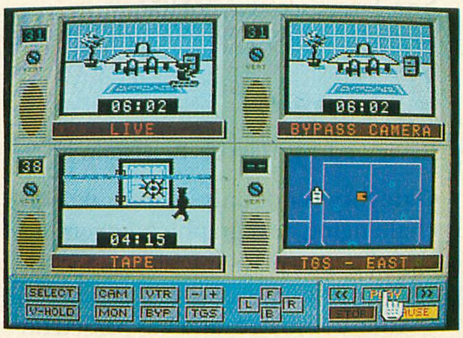
Reviewed by Gregg Pearlman

It's another lonely night, with just your ST for company, so why not log onto Actisource, the International Computer Hotline? Trouble is, you're not a member, so you have a guess at the logon code and, wonder of wonders, you're on. All seems well until midway through the main menu, when the CIA interrupts the transmission. Obviously you didn't just grab any old password—you logged on as someone with a special security clearance, and now you could easily hold the balance of world power in your hand.

That's the premise of **Hacker II**, sequel to Activision's sucessful original Hacker game. The person you've been mistaken for is the world's leading authority on computer security systems. A top Russian scientist plots to overthrow the United States. His plans, the "Doomsday Papers," are locked in a vault in a military complex in Siberia. Pieces of the vault's combination are in four file cabinets. You've probably seen plots like this on TV shows such as "Mission Impossible."

You control, one at a time, three Mobile Remote Units (MRUs), four-foot-high robot information gatherers that scurry from room to room and must be kept out of sight. This is done from the Multi-Function Switching Matrix (MFSM), which houses four small video screens and several control buttons. You can select a screen, switch to one of 38 live cameras, activate a videotape recorder (to bypass a live camera with a synchronized tape of the previous day's events) or activate the Telemetry Guidance System (TGS), with which you can see the MRU's location relative to the rest of the complex.

Hacker II has incredible graphics. Its four MFSM screens can run independently—as if they were real video screens—and the tapes can be paused, rewound or fast-forwarded without the videorecorders being turned off. The picture speeds up accordingly and is accompanied by an interference bar. Each screen has a real-time clock, and if you don't synchronize the video tapes exactly, the MRU will be sniffed out and destroyed.



With the MFSM, you can bypass security cameras in the rooms or hallways where you plan to send the MRU. One of your screens can show the synchronized videotape, and another can show the live view of the same area. You'll constantly need to switch between live and video for each camera. And to successfully travel past several cameras in succession, you may sometimes need fake video on at least three of them. Remember, you can only see the MRU on a camera or the TGS—you can't see out of the MRU's scanners.

In addition to juggling all those screens and cameras, you must not let the MRU be seen by the security monitor which constantly switches from camera to camera, the guards that regularly patrol the building, or the live cameras themselves (unless you've bypassed them). If you're caught, an "annihilator" is summoned—a mobile machine that hunts down the MRU and smashes it flat.

The balance of world power could be in your hand

Once you've reached a file cabinet without being seen, you must type in an access command. The four cabinets must be accessed in the right order, though, or you'll get nowhere. You're told early in the game what one of the access codes is, but you're not told which cabinet it opens.

After you take the Doomsday Papers from the vault, should you get that far, you must leave through the exit at the opposite side of the building. If you are successful all the way through, you've saved the United States.

Hacker II is no day at the beach. It's easy enough to get into those rooms with file cabinets on the west side of the building, but if you reach the wrong cabinet first, you won't be able to open it. And if you're not careful, you may never reach that first cabinet.

The game is fascinating to look at and fun to play—and not just a little frustrating. It may take hundreds of hours to master it. Where in the original Hacker, half the battle is just to log on, this game gets right down to brass tacks. You'll reach the actual game screen soon enough, but don't count on solving Hacker II right away.

continued on next page

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CIRCLE **210** ON READER SERVICE CARD

Reviewed by Sol Guber

Disk Library from Classic Image is an organizer for the directories on your floppy disks. It is used to make a listing of all the files and folders, and allows you to add comments to any file. You can store these listings in a file or print them out.

The Disk Library program does more than just read and save the directories. It lets you update and modify your old directory file as well. Once you read a directory into the computer, it will be in a GEM window. You can then move through the window


Cris Mortensen

using slider bars to examine the files.

One writing style is used for the file, one for the folders and one for the disk name. The information read includes the file size, the date it was stored and the extenders of the file. You can click onto a file and add a comment to it. Then you can put another disk into your drive, press the appropriate keys, and its directory will be read into the system. You are allowed 2,120 entries in memory.

Once you've put information into the computer, the listing can be saved. The pull-down menus have other options to manipulate the listing; you can look at only the file names, folder names, or disk names; you can arrange the information either by size, by date, or by extender, much the same way GEM does. Or you can delete disk information.

You can also search through your files, displaying in a GEM window those meeting the search criteria. And you can print out the listings that have been generated.

The program works well and easily. I had no problems running it, and since it uses a GEM system for all the options, it was easy to learn.

GATEWAY

Action Software
69 Clementina Street
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$39.95
CIRCLE **208** ON READER SERVICE CARD

Reviewed by Harvey Bernstein

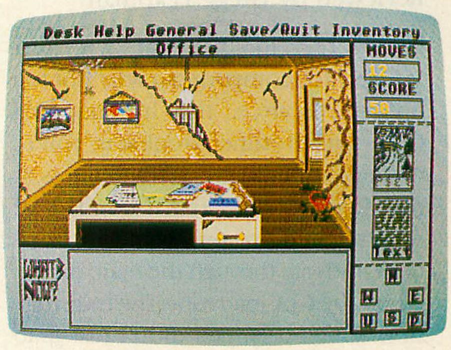
Gateway is not only an exciting and challenging text/graphics adventure game, it also plays the way an ST adventure should.

Your Uncle Bertrand has passed on to his final reward and it is up to you, as his sole heir, to get his estate in order. While examining some of his papers, you find that he writes of a "gateway" to other worlds and dimensions. While others may have thought him insane, it is your familial duty to prove otherwise—in other words, find the gateway, enter it and solve the mysteries that lie within. Sounds easier than it really is!

Gateway is that new hybrid known as a text adventure with graphics. Simply put, this means that it plays as a text adventure, but at key locations, a click on the "pict" icon will load

Gateway provides plenty of challenging surprises at every turn

the appropriate graphic scene. Two unique routines are used here. First, when the picture is on the screen, pointing to or clicking on part of it will provide a description—sort of a mouse-driven "examine" command. More importantly, upon loading, Gateway sets up a 170K RAMdisk and loads all the pictures into it. This means no wait for disk access when calling for a picture.



I mentioned earlier that Gateway takes advantage of the GEM interface. Like Forbidden Quest, the previous release by author Bill Pryor, moving in any direction is just a mouse-click away. Pull-down windows show inventory, allow for saving or loading games, and offer online hints (at a cost, naturally). If the online hints prove too obtuse, a character called K'rnth—sort of a mutant offspring of the Cheshire Cat—will pop up occasionally to offer advice.

I spent many an enjoyable (and frustrating) hour with Gateway and its puzzles. Fortunately, they all have logical solutions, too rare in a lot of games being released these days. Gateway does do what a good adventure does best—provides plenty of challenging surprises at every turn.

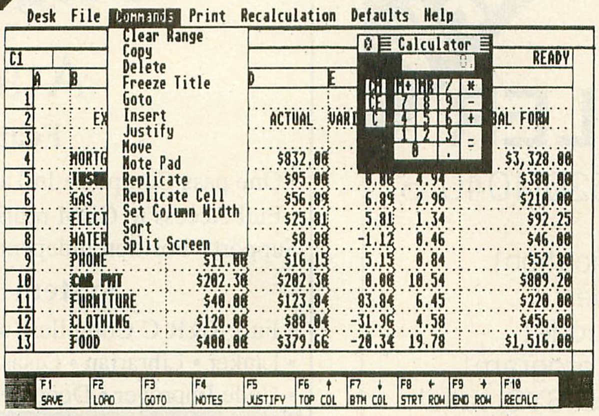
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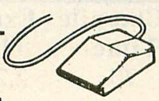


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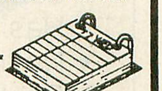
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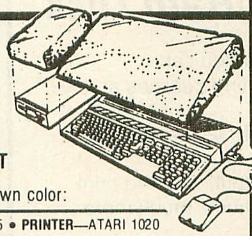
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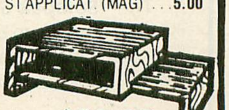
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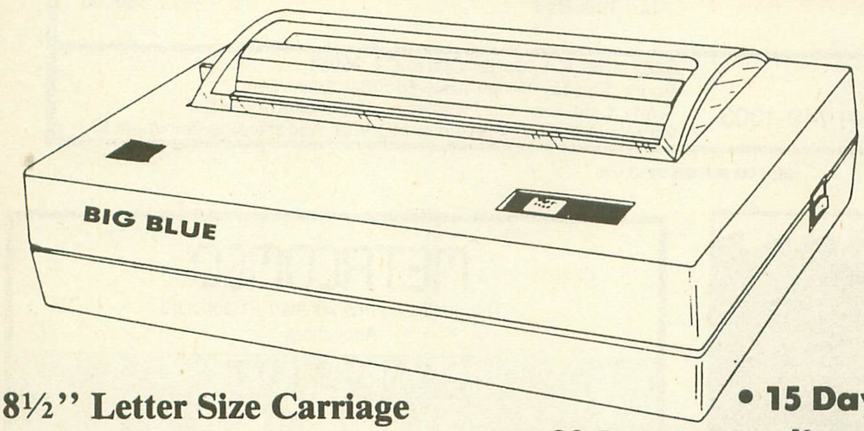
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Antic type-in listing section includes every full-length program from this issue. Listings are easier to type and proofread, easy to remove and save in a binder if you wish.

DISK SUBSCRIBERS: Programs for 8-bit Atari computers can be used immediately. Just follow instructions in the accompanying magazine articles. ST Owners: See monthly disk's ST Help File for instructions on how to transfer programs to 3-1/2 inch disk.

Antic program listings are typeset on the Star's SB-10 printer—from Star Micronics, Inc., 200 Park Avenue, New York, NY 10166.

TYPING SPECIAL ATARI CHARACTERS

Antic printed program listings leave a small space between each Atari Special Character for easier reading. Immediately below you will see the way **Antic** prints all the standard Atari letters and numbers, in upper and lower case, in normal and inverse video.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789 0123456789

The Atari Special Characters and the keys you must type in order to get them are shown in the two boxes below.

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL ,		CTRL S
	CTRL A		CTRL T
	CTRL B		CTRL U
	CTRL C		CTRL V
	CTRL D		CTRL W
	CTRL E		CTRL X
	CTRL F		CTRL Y
	CTRL G		CTRL Z
	CTRL H		ESC ESC
	CTRL I		ESC CTRL -
	CTRL J		ESC CTRL =
	CTRL K		ESC CTRL
	CTRL L		ESC CTRL *
	CTRL M		CTRL .
	CTRL N		CTRL ;
	CTRL O		CTRL =
	CTRL P		ESC SHIFT CLEAR
	CTRL Q		ESC DELETE
	CTRL R		ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	⅄ CTRL ,		CTRL X
	⅄ CTRL A		CTRL Y
	⅄ CTRL B		CTRL Z
	⅄ CTRL C		ESC SHIFT CLEAR
	⅄ CTRL D		ESC SHIFT INSERT
	⅄ CTRL E		ESC CTRL TAB
	⅄ CTRL F		ESC SHIFT TAB
	⅄ CTRL G		⅄ CTRL .
	⅄ CTRL H		⅄ CTRL ;
	⅄ CTRL I		⅄ SHIFT
	⅄ CTRL J		ESC CTRL 2
	⅄ CTRL K		ESC CTRL DELETE
	⅄ CTRL L		ESC CTRL INSERT
	⅄ CTRL M		
	⅄ CTRL N		
	⅄ CTRL O		
	⅄ CTRL P		
	⅄ CTRL Q		
	⅄ CTRL R		
	⅄ CTRL S		
	⅄ CTRL T		
	⅄ CTRL U		
	⅄ CTRL V		
	⅄ CTRL W		

Whenever the CONTROL key (CTRL on the 400/800) or SHIFT key is used, *hold it down* while you press the next key. Whenever the ESC key is pressed, *release* it before you type the next key.

Turn on inverse video by pressing the Reverse Video Mode Key . Turn it off by pressing it a second time. (On the 400/800, use the Atari Logo Key ⅄ instead.)

Among the most common program typing mistakes are switching certain capital letters with their lower-case counterparts—you need to look especially carefully at P, X, O and 0 (zero).

Some of Atari Special Characters are not easy to tell apart from standard alpha-numeric characters. Usually the Special Characters will be boxed. Compare the two sets of characters below:

SPECIAL		STANDARD	
	CTRL F	/	/
	CTRL G	\	SHIFT +
	CTRL N	_	SHIFT -
	CTRL R	-	-
	CTRL S	+	+

HOW TO USE TYPO II (8-BIT)

TYPO II automatically proofreads **Antic**'s type-in BASIC listings for 8-bit Atari computers. It finds the exact line where you made a program typing mistake.

Type in TYPO II and SAVE a copy to disk or cassette. Now type GOTO 32000. When you see the instruction on the screen, type in a single program line **without the two-letter TYPO II code** at the left of the line number. Press the [RETURN] key.

Your line will reappear at the bottom of the screen with a two-letter TYPO II code on the left. If this code is not exactly the same as the line code printed in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk [*] followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000.

To remove TYPO II from your program, type LIST "D:FILENAME",0,31999 [RETURN] (Cassette owners LIST "C:). Type NEW, then ENTER "D:FILENAME"[RETURN](Cassette—ENTER "C:). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.

LISTING 1

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "K":POSITION 11,1:? "TYPO II "

EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "K":POSITION 11,1:? " TYPO II 
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press  RETURN  and edit line a
   bove.":GOTO 32050
```

HOW TO USE TYPO ST

TYPO ST is the automatic proofreading program for checking **Antic's** ST BASIC type-in listings. It finds any program line where you made a typing mistake.

Type in TYPO ST and SAVE a copy to disk before you RUN it. Now type RUN in the command window and press the [RETURN] key, or click on RUN from the RUN menu.

TYPO ST first asks for the name of the file to check. Type the desired filename and press [RETURN]. (TYPO ST will proofread itself if you type TYPOST.BAS as the filename.) Next, TYPO ST asks where you want the TYPO table printed. Type [S] [RETURN] for Screen, or [P] [RETURN] for Printer.

TYPO ST now reads your ST BASIC program and prints out a table of four-number codes—and the line number for each code. Compare your printed TYPO ST table with the **Antic** TYPO ST table published at the end of the program you are checking. If any of your four-number codes don't match the magazine's codes, you have made a typing mistake somewhere in that line. Carefully recheck your line against the published version.

Antic uses a word processor to format ST BASIC listings for publication, so we can indent lines and make the program structure more understandable. ST BASIC doesn't allow indentation and will strip off any spaces between the line number and the first BASIC instruction. Therefore, TYPO ST ignores space characters and does not care how far instructions are spaced apart.

TYPO ST cannot determine if two different characters have been switched within a line. For example, PRINT and PRNIT will look the same to TYPO ST. However, ST BASIC itself catches this error and points it out to you.

```
1000  ' TYPO/ST, (c) 1986 Antic Publishing, by Bill Marquardt
1010   DISK=1: OUTPUT=2: TRUE=(-1): FALSE=0: CHECKSUMMING=TRUE
1020   TV=FALSE: PRINTER=FALSE
1030   print "File to Check:": input FILENAME$: print "Output on:"
1040   print "(S)creen or ": print "(P)rinter ": input DEVICE$
1050   if( DEVICE$="p" )or( DEVICE$="P" )then PRINTER=TRUE else TV=TRUE
1060   if TV then print "Checksum for file: ": print FILENAME$: print
1070   if PRINTER then lprint "Checksum for file: ";FILENAME$: lprint
1080   open "I", #DISK, FILENAME$
1090   while CHECKSUMMING
1100      LINENUMBER=0: CHECKSUM=0: gosub GETALINE
1110      DECIMAL=CHECKSUM: gosub DECTOHEX
1120      OUTPUT$=str$( LINENUMBER )+" :"+HI$+LO$
1130      if PRINTER then lprint OUTPUT$ else print OUTPUT$
1140   wend
1150   close DISK
1160  end
1170  GETALINE:
1180   BLINE$="": on error goto 1150
1190   GOTALINE=FALSE
1200   while not GOTALINE
1210      line input#DISK, BLINE$: if len( BLINE$ )>1 then GOTALINE=TRUE
1220   wend
1230   LINENUMBER=val( BLINE$ )
1240   for CHAR=1 to len( BLINE$ )
1250      OK=TRUE: CHARACTER$=mid$( BLINE$, CHAR, 1 )
1260      if CHARACTER$=" " then OK=FALSE
1270      if OK then CHECKSUM=CHECKSUM+asc( CHARACTER$+chr$( 0 ))
1280   next CHAR
1290  return
1300  DECTOHEX:
1310   DECIMAL=abs( DECIMAL )
1320   HI=int( DECIMAL/256 ): LO=( DECIMAL-( HI*256 ))
1330   HH=int( HI/16 ): HL=( HI-( HH*16 ))
1340   LH=int( LO/16 ): LL=( LO-( LH*16 ))
1350   HI$=chr$( 48+HH-( 7*( HH>9 )))+chr$( 48+HL-( 7*( HL>9 )))
1360   LO$=chr$( 48+LH-( 7*( LH>9 )))+chr$( 48+LL-( 7*( LL>9 )))
1370  return
```

1000 :110B	1060 :13E7	1120 :0A48	1180 :089A	1240 :079B	1300 :0352	1360 :0C29
1010 :0EA2	1070 :140E	1130 :1000	1190 :04C6	1250 :0AEB	1310 :0667	1370 :036B
1020 :071B	1080 :0713	1140 :0274	1200 :0680	1260 :08BB	1320 :0B13	
1030 :12D2	1090 :0661	1150 :0408	1210 :11B9	1270 :0F36	1330 :07E3	
1040 :10E6	1100 :0BBD	1160 :01FF	1220 :0273	1280 :03A8	1340 :0804	
1050 :11A2	1110 :09F0	1170 :034C	1230 :0716	1290 :036C	1350 :0C0E	

CALCULATE YOUR CAR LOAN

Article on page 22

LISTING 1

Don't type the TYPO II Codes!

```
DO 10 REM CAR FINANCER
GX 12 REM BY ELAINE A. PATTERSON
GR 14 REM (c) 1986, ANTIC PUBLISHING
OR 15 BRK=1:IF PEEK(53279)=5 THEN BRK=0
SO 20 GOSUB 3000:CLOSE #1:OPEN #1,4,0,"K:
   "
FP 29 REM COST OF AUTO
MW 30 GRAPHICS 1:POKE 712,146:POKE 710,PE
   EK(712):POKE 709,40:POKE 708,138:POKE
   711,30:POKE 752,1
CP 35 GOSUB 3000:POSITION 1,2:? #6;"THIS
   PROGRAM WILL":? #6;" TAKE INTO ACCOUNT
   "
KA 40 ? #6;"   ALL VARIABLES":? #6;" WHEN
    BUYING A CAR":? #6;" TO DETERMINE YOU
   R"
QD 45 ? #6;" monthly  payments":POSITION
   4,11:? #6;"WHAT IS THE":? #6;"   askin
   g price";CHR$(159)
VK 50 TRAP 50:INPUT PRICE:AMOUNT=PRICE
PR 60 POSITION 6,13:? #6;"$";PRICE:GOSUB
   1000
LZ 70 IF D=78 THEN 30
UI 79 REM TRADE
CQ 80 ? #6;CHR$(125):POSITION 1,2:? #6;"W
   ILL YOU TRADE-IN?":POSITION 7,4:? #6;"
   (Y/N)":? "■";:GOSUB 1010
IA 90 IF D=78 THEN TRADE=0:GOTO 130
CL 100 POSITION 0,6:? #6;"enter trade-in 
   value":TRAP 100:? "■";:INPUT TRADE
OZ 110 POSITION 5,8:? #6;"$";TRADE:GOSUB
   1000:IF D=78 THEN ? #6;CHR$(125):GOTO
   100
OS 120 AMOUNT=AMOUNT-TRADE
OV 129 REM TAX
BD 130 ? #6;CHR$(125):POSITION 4,3:? #6;"
   WHAT IS THE":? #6;"  sales tax rate";C
   HR$(159)
WQ 140 POSITION 2,6:? #6;"ENTER 4 FOR 4%
   or":POSITION 1,7:? #6;"6.75 FOR 6.75%"

WJ 150 TRAP 150:? "■";:INPUT TAX:POSITION
    7,9:? #6;TAX;"%":GOSUB 1000
MP 160 IF D=78 THEN 130
IL 170 TAX=TAX/100:AMOUNT=INT((AMOUNT+TAX
   *AMOUNT)*100)/100
FS 179 REM DOWN PAYMENT
SO 180 ? #6;CHR$(125):POSITION 4,3:? #6;"
   HOW MUCH":POSITION 2,4:? #6;"down paym
   ent";CHR$(159)
GM 190 TRAP 190:? "■";:INPUT DPAY:POSITIO
   N 7,9:? #6;"$";DPAY:GOSUB 1000:IF D=78
    THEN 180
FX 199 REM MISC. EXPENSES
JP 200 ? #6;CHR$(125):POSITION 2,2:? #6;"
   TAG, TITLE, AND":POSITION 3,3:? #6;"MI
   SCELLANEOUS"
SH 205 POSITION 5,5:? #6;"expenses";CHR$(
   159)
CD 210 TRAP 210:? "■";:INPUT MISC:POSITIO
   N 7,10:? #6;"$";MISC:GOSUB 1000:IF D=7
   8 THEN 200
EX 220 AMOUNT=AMOUNT+MISC-DPAY
WN 229 REM FINANCE RATE
WC 230 ? #6;CHR$(125):POSITION 4,3:? #6;"
   WHAT IS THE":POSITION 3,4:? #6;"financ
   e rate";CHR$(31)
HN 240 POSITION 2,6:? #6;"ENTER 19 FOR 19
   %":POSITION 9,7:? #6;"OR":POSITION 4,8
   :? #6;"9.9 FOR 9.9%"
YA 250 TRAP 250:? "■";:INPUT RATE:POSITIO
   N 7,10:? #6;RATE;"%":GOSUB 1000
NI 260 IF D=78 THEN 230
VE 270 RATE=RATE/100
BT 279 REM NUMBER OF MONTHS
OO 280 ? #6;CHR$(125):POSITION 2,2:? #6;"
   HOW MANY months";CHR$(159)
VR 290 TRAP 290:? "■";:INPUT M:TRAP 40000

QO 300 POSITION 4,8:? #6;M;" MONTHS":GOSU
   B 1000
QQ 310 IF D=78 THEN 280
CX 319 REM SOURCE OF LOAN
EK 320 ? #6;CHR$(125):POSITION 2,2:? #6;"
   WILL THIS LOAN BE  FROM A:":POSITION 2
   ,7:? #6;"1 bank"
YK 330 POSITION 2,9:? #6;"2 car finance c
   o":POSITION 4,10:? #6;"(GMAC,FORD,ETC.
   )"
ZB 340 POSITION 0,15:? #6;"what is your c
   hoice";CHR$(159):GOSUB 2000
WY 350 ON D GOTO 360,390
BS 359 REM BANK METHOD
SL 360 FINAN=RATE*AMOUNT*M/12:FINAN=INT(F
   INAN*100+0.5)/100
OB 370 REPAY=AMOUNT+FINAN:PAYMENT=REPAY/M
   :PAYMENT=INT(PAYMENT*100+0.5)/100
QM 380 GOTO 480
FA 389 REM CAR FINANCE CO. METHOD
MF 390 PAYMENT=(AMOUNT+(AMOUNT*RATE*M/12)
   )/M:PAYMENT=PAYMENT-30:EAP=AMOUNT:PAYM
   ENT=INT(PAYMENT*100+0.5)/100
UK 400 FOR TIME=1 TO M:POKE 77,0
ZP 410 FINAN=AMOUNT*RATE*(1/12):FINAN=INT
   (FINAN*100+0.5)/100
OD 420 AMOUNT=AMOUNT+FINAN-PAYMENT
BU 430 NEXT TIME:? " WORKING "
ZT 440 IF AMOUNT<40 AND AMOUNT>-40 THEN A
   MOUNT=EAP:FINAN=PAYMENT*M-AMOUNT:GOTO
   480
JB 450 IF AMOUNT<-40 THEN PAYMENT=PAYMENT
   -0.5
BH 451 REM .5'S CAN BE CHANGED TO .75 IF
   THAT WOULD SPEED IT UP
PY 460 IF AMOUNT>40 THEN PAYMENT=PAYMENT+
   0.5
FI 470 AMOUNT=EAP:GOTO 400
YI 479 REM OUTPUT CHOICE
KZ 480 ? #6;CHR$(125):POSITION 3,4:? #6;"
   DO YOU WANT THE":? #6;"  RESULTS ON:"
VF 490 POSITION 3,8:? #6;"1 screen or":PO
   SITION 3,10:? #6;"2 printer"
NR 500 POSITION 0,14:? #6;"WHAT IS YOUR C
   HOICE?":GOSUB 2000
UB 790 ON D GOTO 800,900
BH 799 REM DISPLAY RESULTS
CJ 800 GRAPHICS 0:GOSUB 3000:? "PRICE: $"
   ;PRICE:? "TRADE-IN VALUE: $";TRADE
CT 810 ? "TAX RATE: ";TAX*100;"%":? "DOWN
    PAYMENT: $";DPAY
EK 820 ? "FINANCE RATE: ";RATE*100;"%":?
   "AMOUNT FINANCED: $";AMOUNT:? "MONTHS:
    ";M:? "INTEREST: $";FINAN
NX 830 ? "TOTAL TO REPAY: $";AMOUNT+FINAN
   :? "MONTHLY PAYMENT: $";PAYMENT:GOTO 1
   030
FT 899 REM PRINT RESULTS
DC 900 GRAPHICS 0:GOSUB 3000:? "PRINTING"
   :LPRINT "PRICE: $";PRICE:LPRINT "TRADE
```

continued on next page

```
   -IN VALUE: $";TRADE
FF 910 LPRINT "TAX RATE: ";TAX*100;"%":LP
   RINT "DOWN PAYMENT: $";DPAY
ZJ 920 LPRINT "FINANCE RATE: ";RATE*100;"
   %":LPRINT "AMOUNT FINANCED: $";AMOUNT:
   LPRINT "MONTHS: ";M
XT 930 LPRINT "INTEREST: $";FINAN:LPRINT
   "TOTAL TO REPAY: $";AMOUNT+FINAN:LPRIN
   T "MONTHLY PAYMENT: $";PAYMENT
LG 940 GOTO 1030
NC 1000 POSITION 1,15:? #6;"IS THIS CORRE
   CT?":POSITION 6,16:? #6;"(Y/N)"
XG 1010 GET #1,D:IF D=89 OR D=78 THEN RET
   URN
NH 1020 GOTO 1010
XA 1030 POSITION 2,15:? "1 ONE MORE TIME"
   :POSITION 2,17:? "2 QUIT"
OJ 1040 POSITION 2,20:? "What is your cho
   ice?";
XK 1050 GOSUB 2000
XH 1060 IF D=1 THEN 30
EB 1070 GRAPHICS 0:END
XE 2000 GET #1,D:D=D-48:IF D<1 OR D>2 THE
   N 2000
AD 2010 RETURN
VJ 2999 REM DISABLE BREAK
IR 3000 POKE 77,0:IF BRK THEN POKE 16,112
   :POKE 53774,112
AE 3010 RETURN
```

---

mars open-pit mining: No picnic!

CLIFFHANGER

Article on page 27

LISTING 1

Don't type the TYPO II Codes!

```
VQ 5 REM CLIFFHANGER!
EK 6 REM BY HEATH LAWRENCE
FV 7 REM (c) 1986, ANTIC PUBLISHING
QM 10 GOSUB 610
TT 20 GOSUB 500:GOSUB 460:GOSUB 480:GOTO
   160
MP 30 REM MOVE DEBRIS
TI 40 OX=DX:DX=DX-0.5:IF DX<>INT(DX) THEN
    RETURN
NS 50 POKE 77,0:POKE SC+OX+20*DY,DP:IF DX
   <1 THEN GOSUB 350:GOSUB 460:RETURN
AU 60 DP=PEEK(SC+INT(DX)+20*DY):IF DP=172
    THEN GOSUB 210:GOTO 160
NU 70 POKE SC+INT(DX)+20*DY,240:RETURN
UO 80 REM DOWN
LW 90 GOSUB 40:POKE SC+PX+20*RY,107:RY=RY
   +1:RP=PEEK(SC+PX+20*RY):IF RP=240 THEN
    GOSUB 210:GOTO 160
LE 100 ON RP=168 GOSUB 290:ON RP=110 GOSU
   B 320:IF STRIG(0)<>0 OR RY>18 THEN GOS
   UB 130:GOTO 160
PI 110 POKE SC+PX+20*RY,172:GOTO 90
IR 120 REM UP
IT 130 FOR Y=RY TO 2 STEP -1:RP=PEEK(SC+P
   X+20*Y):IF RP=240 THEN RY=Y:GOSUB 210:
   GOTO 160
JB 140 POKE SC+PX+20*Y,172:POKE SC+PX+20*
   Y,0:NEXT Y:POKE SC+PX+20*2,172:RETURN
QV 150 REM PULLY
LR 160 GOSUB 40:S=STICK(0):SOUND 1,0,0,0:
   IF STRIG(0)=0 THEN RY=2:GOTO 90
ZL 170 ON S=15 GOTO 160
CL 180 SOUND 1,255,6,8:POKE SC+PX+20*1,98
   :POKE SC+PX+20*2,0:PX=PX-1*(S=11)+1*(S
   =7):PX=PX-1*(PX>18)+1*(PX<1)
PI 190 POKE SC+PX+20*1,33:POKE SC+PX+20*2
   ,172:GOTO 160
GN 200 REM GOT DEBRIS
GY 210 FOR Y=RY TO 2 STEP -1:POKE SC+PX+2
   0*Y,173:FOR D=1 TO 30:NEXT D:POKE SC+P
   X+20*Y,0:NEXT Y
OR 211 POKE SC+PX+20*2,172
HP 220 FOR X=PX TO 1 STEP -1:SOUND 1,255,
   6,8:POKE SC+X+20*1,33:POKE SC+X+20*2,1
   73:FOR D=1 TO 30:NEXT D:PX=1
BR 230 POKE SC+X+20*1,98:POKE SC+X+20*2,0
   :NEXT X:POKE SC+21,33:POKE SC+41,172:F
   OR D=1 TO 25:NEXT D
XV 231 FOR Y=3 TO 20
XK 240 POKE SC+1+20*Y,240:FOR D=1 TO 15:N
   EXT D:POKE SC+1+20*Y,0:SOUND 1,Y,10,8:
   NEXT Y:FOR X=1 TO 10 STEP 0.2
CW 250 SOUND 1,10,8,X:POKE SC+401,182
PK 251 IF X>5 THEN POKE SC+401,183:NEXT X
   :POKE SC+401,0:FOR X=10 TO 0 STEP -0.3

FX 260 SOUND 1,10,8,X:NEXT X:FOR X=1 TO D
   Y:SCO=SCO+1:FOR J=1 TO 50 STEP 9:SOUND
    1,J,8,10:SOUND 1,0,0,0:NEXT J
VY 270 GOSUB 480:NEXT X:GOSUB 460:RETURN
OV 280 REM HIT GRUD
QP 290 FOR X=1 TO 5:FOR Z=1 TO 50 STEP 5:
   SOUND 1,Z,10,8:SOUND 2,Z+50,10,8:NEXT
   Z:SCO=SCO-1:IF SCO<0 THEN SCO=0
KR 300 GOSUB 480:NEXT X:SOUND 1,0,0,0:SOU
   ND 2,0,0,0:RETURN
QQ 310 REM HIT GAS BUBBLE
WW 320 FOR X=100 TO 255 STEP 4:SOUND 1,X,
   8,8:POKE SC+PX+20*RY,246:POKE SC+PX+20
   *RY,119:NEXT X
JO 321 POKE SC+PX+20*RY,117
ML 330 SOUND 1,0,0,0:FOR D=1 TO 100:NEXT
   D:GOTO 420
FZ 340 REM DEBRIS IMPACTS
OS 350 FOR X=100 TO 255 STEP 4:SOUND 1,X,
   8,8:POKE SC+20*DY,246:POKE SC+20*DY,11
   9:NEXT X
MO 351 POKE SC+20*DY,248:DA=DA+1
BE 360 SOUND 1,0,0,0:GOSUB 480:ON DA=5 GO
   TO 380:RETURN
XG 370 REM COLLAPSE!
FN 380 FOR Y=1 TO 19:POSITION 1,Y:? #6;RO
   PE$:FOR D=1 TO 15:NEXT D:POSITION 1,Y:
   ? #6;BL$:SOUND 1,Y+50,10,8
MQ 381 NEXT Y
UN 390 FOR Y=1 TO 19:SOUND 1,Y+200,8,8:PO
   SITION 0,Y:? #6;"D":FOR D=1 TO 15:NEXT
    D:POSITION 0,Y:? #6;" "
MS 391 NEXT Y
YY 400 RESTORE 730:FOR Y=20 TO 15 STEP -1
   :READ Z:FOR X=0 TO 6-Z:POSITION X,Y:?
   #6;"g":NEXT X:FOR D=1 TO 20
DZ 401 NEXT D
RV 410 NEXT Y:SOUND 1,0,0,0:FOR D=1 TO 35
   0:NEXT D
LW 420 GRAPHICS 17:POKE 756,224:POSITION
   4,5:? #6;"xGAME OVERx":POSITION 5,10:?
    #6;"Score:";SCO:POSITION 5,11
RC 430 ? #6;"-----":POSITION 3,16:? #6;"P
   RESS <Start>"
UU 440 ON PEEK(53279)<>6 GOTO 440:GOTO 20

QZ 450 REM GET DEBRIS Y
```

```
MN 460 DY=INT(RND(0)*17)+3:DP=PEEK(SC+18+
   20*DY):POKE SC+18+20*DY,240:DX=18:RETU
   RN
MD 470 REM UPDATE SCORE
KH 480 POSITION 7,23:? #6;SCO;"     ":POSIT
   ION 16,23:? #6;DA:RETURN
TZ 490 REM PLAYFIELD
HL 500 GRAPHICS 17:POKE 756,ST/256:SC=PEE
   K(88)+256*PEEK(89):SCO=0:DA=0:PX=10:RY
   =2:DX=18:FOR Y=2 TO 22
FI 501 POSITION 0,Y
IY 510 ? #6;"■":POSITION 19,Y:? #6;"■":NE
   XT Y:FOR X=0 TO 19:POSITION X,21:? #6;
   "■":POSITION X,22:? #6;"■"
LU 511 NEXT X
EF 520 POSITION 2,20:? #6;"■":POSITION 1,
   21:? #6;"■":POSITION 18,20:? #6;"■":PO
   SITION 0,2:? #6;"■"
SN 521 POSITION 19,2
FO 530 ? #6;"■":POSITION 0,1:? #6;"D":POS
   ITION 19,1:? #6;"■":FOR X=1 TO 18:POSI
   TION X,1:? #6;"b":NEXT X
OT 540 POSITION 19,1:? #6;"■":FOR X=1 TO
   18:POSITION X,1:? #6;"b":NEXT X:POSITI
   ON 1,23:? #6;"SCORE:          u:"
JU 550 POSITION 10,1:? #6;"A":POSITION 10
   ,2:? #6;"■"
ZR 560 REM SET OBSTACLES
XL 570 FOR X=2 TO 17:DO=INT(RND(0)*2):ON
   DO=1 GOTO 590:T=INT(RND(0)*2):SHA=200*
   (T=0)+110*(T=1)
JO 580 POSITION X,INT(RND(0)*17)+3:? #6;C
   HR$(SHA)
SX 590 NEXT X:RETURN
RV 600 REM REDEFINE
NW 610 DIM ROPE$(18),BL$(18):ROPE$="yyyyy
   yyyyyyyyyyyyy":BL$="
   ":RESTORE 660
JC 611 POKE 106,PEEK(740)-5
YN 620 GRAPHICS 18:SETCOLOR 4,2,2:POSITIO
   N 4,2:? #6;"CLIFFHANGER":POSITION 1,5:
   ? #6;"BY HEATH LAWRENCE"
NJ 621 POSITION 4,8
YH 630 ? #6;"Please wait":ST=(PEEK(106)+1
   )*256:FOR X=0 TO 1023:POKE ST+X,PEEK(5
   7344+X):NEXT X
GP 631 FOR SHAPE=1 TO 20
EV 640 READ ICS:FOR X=0 TO 7:READ BYTE:PO
   KE ST+ICS+X,BYTE:NEXT X:NEXT SHAPE:RET
   URN
OQ 650 REM SHAPE DATA
EN 660 DATA 264,126,255,129,60,129,255,60
   ,24,272,0,0,0,85,170,0,0,0,288,126,129
   ,185,145,181,169
TZ 665 DATA 255,255,304,15,19,37,73,255,3
   ,5,13,312,213,107,222,107,214,181,218,
   107,320,0,24,60,90
VS 670 DATA 126,36,90,36,328,214,107,180,
   104,176,108,218,116,336,107,214,45,22,
   13,54,91,46,344,16,8
JP 675 DATA 16,8,16,8,16,8,352,24,24,60,1
   02,195,195,102,36,360,24,24,60,110,239
   ,110,60,24,368
ZF 680 DATA 0,60,110,94,94,110,60,0,384,0
   ,28,110,219,247,92,48,0,392,0,0,0,24,5
   2,106,210
MW 685 DATA 173,416,1,1,2,7,14,21,122,171
   ,424,129,90,60,90,126,36,90,129,432,0,
   18,64,4,32
DS 690 DATA 8,64,0,440,65,8,32,129,36,0,3
   4,144,448,213,166,58,192,64,128,105,15
   0,456,0,48,72
IK 695 DATA 72,132,132,3,0
KA 720 REM CLIFF FALL DATA
ND 730 DATA 0,2,3,3,4,6
```

pro-quality visual punch for your reports

V-GRAPH

Article on page 31

LISTING 1

Don't type the TYPO II Codes!

```
OJ 10 REM V-GRAPH
DJ 20 REM BY ALFRED FILSKOV
GL 30 REM (c) 1986, ANTIC PUBLISHING
OT 35 BRK=1:IF PEEK(53279)=5 THEN BRK=0
EA 40 DIM A$(20),F$(15),G$(37),T$(40),XL$
   (300),M$(72),TL$(40),YL$(20),K$(25)
JA 50 DIM CL$(1),Y(100,2),A(100),B(100,2)
   ,PTS(3)
YN 60 M$="JANFEBMARAPRMAYJUNJULAUGSEPOCTN
   OVDEC":M$(37)=M$:CL$=CHR$(125)
GF 70 GRAPHICS 0:POKE 82,2:POKE 83,39:CLO
   SE #1:OPEN #1,4,0,"K:":GOSUB 1930
WP 80 ? CL$:POSITION 17,1:? "V-GRAPH":? "
        by Alfred H. Filskov, III"
SF 90 ? :? "This program will plot graphs
    with up to 100 points based on data f
   rom disk files."
NV 100 ? :? "Do you want a disk directory
    (Y/N)?";
FI 110 GOSUB 1280:IF  NOT A THEN 140
BK 120 ? CL$:TRAP 310:CLOSE #2:OPEN #2,6,
   0,"D:*.*"
BK 130 INPUT #2,A$:? A$;"  ";:IF A$(5,9)<
   >"FREE " THEN 130
DT 140 CLOSE #2:? :? :? "How many files d
   o you want to graph   at once (1-3)?";
BG 150 GET #1,FILES:FILES=FILES-48:IF FIL
   ES<1 OR FILES>3 THEN 150
HA 160 ? FILES:? :A=0:YMAX=0:YMIN=900000:
   G$=" ":G$(36)=" ":G$(2)=G$
XP 170 REM LOAD FILES
SO 180 A=A+1:? "Enter filename ";A;".  D:
   ";:INPUT #16;A$
EI 190 F$="D:":F$(3)=A$:TRAP 310:CLOSE #2
   :OPEN #2,4,0,F$:B=0:TRAP 250
AE 200 INPUT #2,C:IF C>900000 THEN ? "DAT
   A TOO LARGE!":GOTO 100
EM 210 IF C<0 THEN ? "DATA LESS THAN 0!":
   GOTO 100
DY 220 B=B+1:Y(B,A-1)=C:IF YMAX<C THEN YM
   AX=C
PA 230 IF YMIN>C THEN YMIN=C
UF 240 IF B<100 THEN 200
QC 250 IF B=0 THEN A=A-1:? "BAD LOAD FILE
   !":GOTO 180
AO 260 PTS(A)=B:G$(A*12-11)=A$:IF A<FILES
    THEN 180
EL 270 IF FILES=1 THEN 320
TF 280 IF FILES=2 AND PTS(1)=PTS(2) THEN
   320
MU 290 IF FILES=3 AND PTS(1)=PTS(2) AND P
```

continued on next page

```
   TS(2)=PTS(3) THEN 320
BQ 300 ? "FILES DID NOT HAVE THE SAME NUM
   BER OF DATA POINTS!":GOTO 100
UM 310 ? :? "DISK ERROR #";PEEK(195):GOTO
    100
YI 320 GOSUB 1530:REM SET SCALE
FT 330 GOSUB 1800:REM SET LABELS
WD 340 REM MENU
HK 350 TRAP 40000:POKE 702,64:GRAPHICS 0:
   GOSUB 1930:POKE 82,11:? :? :? "    M E
    N U":? "    ---------"
MS 360 ? :? "1. BARGRAPH":? "2. LINE GRAP
   H":? "3. POINT GRAPH"
KB 370 ? "4. CHANGE SCALE":? "5. CHANGE L
   ABELS":? "6. NEW DATA":? "7. END PROGR
   AM"
UZ 380 ? :? " YOUR CHOICE?";:POKE 82,2
DV 390 GET #1,A:GH=A-48:IF GH<1 OR GH>7 T
   HEN 390
FB 400 ? GH:IF GH=4 THEN GOSUB 1530:GOTO
   350
NT 410 IF GH=5 THEN GOSUB 1800:GOTO 350
LJ 420 IF GH=6 THEN RUN
PJ 430 IF GH=7 THEN ? CL$:END
HM 440 IF GH>1 THEN ? :? :? " DO YOU WANT
    VERTICAL LINES (Y/N)?";:GOSUB 1280:VL
   =A
DG 450 REM DRAW GRAPH
YA 460 GRAPHICS 8+16:GOSUB 1930:COLOR 1
KD 470 PLOT 56,8:DRAWTO 56,155:DRAWTO 319
   ,155
PL 480 FOR A=LOW TO HI STEP (HI-LOW)/DIV:
   C=155-(A-LOW)*SCALE
CB 490 PLOT 50,C:DRAWTO 55,C:T$=STR$(A)
NA 500 X=6-LEN(T$):Y=C-3:GOSUB 740
IC 510 FOR B=59 TO 317 STEP 3:PLOT B,C:NE
   XT B
CX 520 NEXT A
IH 530 IF TL$<>"" THEN T$=TL$:X=20-INT(LE
   N(T$)/2):Y=0:GOSUB 740
ID 540 IF YL$<>"" THEN FOR A=1 TO LEN(YL$
   ):T$=YL$(A,A):X=0:Y=72-LEN(YL$)*4+A*8:
   GOSUB 740:NEXT A
ME 550 IF XLABEL=5 THEN 600
YI 560 A=1:FOR B=1 TO PTS:A$=XL$(A,A+LL-1
   )
LO 570 FOR C=1 TO LL:T$=A$(C,C):X=A(B)/8:
   Y=149+C*7:GOSUB 740:NEXT C
IQ 580 A=A+LL:IF A>LEN(XL$) THEN A=1
DV 590 NEXT B
OP 600 IF FILES>1 THEN ON FILES-1 GOSUB 8
   40,900:REM PRINT KEY
LI 610 IF VL AND GH>1 THEN FOR A=1 TO PTS
   :FOR B=154 TO 9 STEP -5:PLOT A(A),B:NE
   XT B:NEXT A:REM VERTICAL LINES
NA 620 ON GH GOSUB 980,1040,1040:REM PLOT
    BARS OR POINTS
UK 630 T$="(M)enu":X=0:Y=160:GOSUB 740:T$
   ="(P)rint":X=0:Y=168:GOSUB 740
DB 640 GET #1,A:IF A<>77 AND A<>80 THEN 6
   40
OF 650 IF A=77 THEN 350
UI 660 COLOR 0:FOR A=0 TO 55:PLOT A,160:D
   RAWTO A,174:NEXT A:COLOR 1:TRAP 630
MX 670 REM PUT GR.8+16 DUMP ROUTINE HERE
NC 680 TRAP 1960:T=PEEK(88)+PEEK(89)*256:
   CLOSE #3:OPEN #3,8,0,"P:":? #3;CHR$(27
   );"A";CHR$(8)
TG 690 FOR U=0 TO 39:? #3;CHR$(27);"L";CH
   R$(128);CHR$(1);
PI 700 FOR V=191 TO 0 STEP -1:W=PEEK(T+U+
   V*40):? #3;CHR$(W);CHR$(W);
MQ 710 NEXT V:? #3:NEXT U:CLOSE #3
RO 720 TRAP 40000:GOTO 630
SW 730 REM PRINT IN GR.8
XO 740 X=INT(X):Y=INT(Y):COLS=40:START=(P
   EEK(89)*256+PEEK(88))+Y*COLS+X
HY 750 FOR E1=1 TO LEN(T$):E3=ASC(T$(E1))

XR 760 IF E3<32 OR (E3>127 AND E3<160) TH
   EN E3=E3+64:GOTO 780
CS 770 IF E3>31 AND E3<96 THEN E3=E3-32
WM 780 CHARSET=PEEK(756)*256+E3*8
TG 790 FOR E2=7 TO 1 STEP -1
IA 800 POKE START+E2*COLS,PEEK(CHARSET+E2
   ):NEXT E2
RL 810 X=X+1:IF X>=COLS THEN START=START+
   COLS*8:X=0
JC 820 START=START+1:NEXT E1:RETURN
SL 830 REM TWO FILES IN KEY
LN 840 T$="Key:    -           -":T$(9)=K$
   (1,8):T$(21)=K$(9,16):X=7:Y=182:GOSUB
   740
ON 850 IF GH>1 THEN X=108:Y=185:F=1:GOSUB
    1110:X=204:F=2:GOSUB 1110:RETURN
SC 860 FOR A=106 TO 110:PLOT A,182:DRAWTO
    A,188:NEXT A
RB 870 PLOT 202,188:DRAWTO 202,182:DRAWTO
    206,182:DRAWTO 206,188:DRAWTO 202,188
   :PLOT 203,185:DRAWTO 205,185
ZU 880 RETURN
QF 890 REM THREE FILES IN KEY
CZ 900 T$="Key:    -           -
    -":T$(9)=K$(1,8):T$(21)=K$(9,16):T$(3
   3)=K$(17,24)
RS 910 X=0:Y=182:GOSUB 740
ZX 920 IF GH>1 THEN X=52:Y=185:F=1:GOSUB
   1110:X=148:F=2:GOSUB 1110:X=244:F=3:GO
   SUB 1110:RETURN
EE 930 FOR A=50 TO 54:PLOT A,182:DRAWTO A
   ,188:NEXT A
KI 940 PLOT 146,188:DRAWTO 146,182:DRAWTO
    150,182:DRAWTO 150,188:DRAWTO 146,188
   :PLOT 147,185:DRAWTO 149,185
QD 950 PLOT 242,188:DRAWTO 242,182:DRAWTO
    246,182:DRAWTO 246,188:PLOT 244,183:D
   RAWTO 244,188
ZR 960 RETURN
WY 970 REM BARGRAPH
KR 980 FOR A=1 TO PTS
FL 990 IF FILES=1 THEN B=-2:GOSUB 1180
KL 1000 IF FILES=2 THEN B=-4:GOSUB 1180:B
   =2:GOSUB 1190
NZ 1010 IF FILES=3 THEN B=-8:GOSUB 1180:B
   =-2:GOSUB 1190:B=4:GOSUB 1230
CT 1020 NEXT A:RETURN
ZO 1030 REM POINT AND LINE GRAPH
XP 1040 FOR A=0 TO FILES-1:FOR B=1 TO PTS

SJ 1050 X=A(B):Y=B(B,A):F=A+1:GOSUB 1110
NQ 1060 NEXT B:NEXT A
II 1070 IF GH=3 THEN RETURN
FL 1080 FOR A=0 TO FILES-1:PLOT A(1),B(1,
   A):FOR B=2 TO PTS:DRAWTO A(B),B(B,A)
ED 1090 NEXT B:NEXT A:RETURN
YI 1100 REM DRAW POINTS
FB 1110 COLOR 0:PLOT X,Y-2:DRAWTO X,Y+2:C
   OLOR 1
CQ 1120 IF F=1 THEN PLOT X,Y:PLOT X,Y-1:P
   LOT X+1,Y-1:DRAWTO X+1,Y+1:DRAWTO X-1,
   Y+1:DRAWTO X-1,Y-1
BE 1130 IF F=2 THEN PLOT X,Y:PLOT X-1,Y-2
   :DRAWTO X+1,Y-2:PLOT X+2,Y-1:DRAWTO X+
   2,Y+1
IK 1140 IF F=2 THEN PLOT X+1,Y+2:DRAWTO X
   -1,Y+2:PLOT X-2,Y+1:DRAWTO X-2,Y-1
MG 1150 IF F=3 THEN PLOT X-2,Y-2:DRAWTO X
   +2,Y+2:PLOT X+2,Y-2:DRAWTO X-2,Y+2
AT 1160 RETURN
WO 1170 REM DRAW BARS
DE 1180 FOR C=B TO B+4:PLOT A(A)+C,B(A,0)
   :DRAWTO A(A)+C,155:NEXT C:RETURN
JS 1190 COLOR 0:FOR C=A(A)+B+1 TO A(A)+B+
   3:PLOT C,B(A,1):DRAWTO C,154:NEXT C:CO
   LOR 1
GA 1200 PLOT A(A)+B,155:DRAWTO A(A)+B,B(A
   ,1):DRAWTO A(A)+B+4,B(A,1):DRAWTO A(A)
   +B+4,155
QK 1210 IF B(A,1)<152 THEN FOR C=B(A,1) T
   O 153 STEP 3:PLOT A(A)+B,C:DRAWTO A(A)
   +B+4,C:NEXT C
AJ 1220 RETURN
OQ 1230 IF B(A,2)>153 THEN 1250
TR 1240 COLOR 0:PLOT A(A)+B+1,B(A,2):DRAW
   TO A(A)+B+1,154:PLOT A(A)+B+3,B(A,2):D
   RAWTO A(A)+B+3,154:COLOR 1
KO 1250 PLOT A(A)+B,155:DRAWTO A(A)+B,B(A
   ,2):DRAWTO A(A)+B+4,B(A,2):DRAWTO A(A)
   +B+4,155
BU 1260 PLOT A(A)+B+2,B(A,2):DRAWTO A(A)+
   B+2,155:RETURN
NZ 1270 REM GET YES OR NO
HT 1280 ? "Y⊞";:POKE 702,64:GET #1,A:IF A
   <>78 AND A<>89 AND A<>155 THEN 1280
VH 1285 IF A=155 THEN A=89
```

```
CU 1290 ? CHR$(A):A=(A-78)/11:RETURN
OE 1300 REM CUSTOM
RC 1310 ? CL$:? "CUSTOM LABELS:  (";PTS;"
   DATA POINTS)"
GD 1320 ? :? "HOW MANY CHARACTERS LONG WI
   LL EACH    LABEL BE (1-3)?";
ZR 1330 TRAP 1330:GET #1,LL:LL=LL-48:IF L
   L<1 OR LL>3 THEN 1330
WR 1340 ? LL:? :? "TYPE THE LABELS FOR EA
   CH POINT.          PRESS [RETURN] WHEN YO
   U ARE DONE AND"
WQ 1350 ? "YOU WANT THE LABELS TO REPEAT.
   ":A=1
BS 1360 ? :? "TYPE LABEL FOR POINT ";A;".
   >";:B=1
GM 1370 GET #1,C:IF C=155 AND B=1 AND A>1
    THEN ? "REPEAT":RETURN
ZU 1380 IF C<32 OR C>123 THEN 1370
KJ 1390 XL$(A*LL-LL+B)=CHR$(C):? CHR$(C);

LA 1400 IF B<LL THEN B=B+1:GOTO 1370
ZE 1410 IF A<PTS THEN A=A+1:GOTO 1360
SX 1420 ? :RETURN

II 1430 REM LETTERS
NP 1440 FOR A=65 TO 90:XL$(A-64)=CHR$(A):
   NEXT A:LL=1:RETURN
NN 1450 REM MONTHS
MX 1460 TRAP 1460:? :? "STARTING MONTH #
   (1-12)";:INPUT A:A=INT(A):IF A<1 OR A>
   12 THEN 1460
MA 1470 LL=3:B=A*3-2:XL$=M$(B,B+35):RETUR
   N
EF 1480 REM NUMBERS
ZS 1490 TRAP 1490:? :? "STARTING WITH # (
   0-900)";:INPUT A:A=INT(A):IF A<0 OR A>
   900 THEN 1490
NM 1500 XL$=" ":XL$(300)=" ":XL$(2)=XL$
JN 1510 LL=LEN(STR$(A+PTS)):FOR B=1 TO PT
   S:XL$(B*LL-LL+1)=STR$(A+B-1):NEXT B:RE
   TURN
GK 1520 REM SET Y-AXIS SCALE
NF 1530 ? CL$:? "SET Y-AXIS SCALE:"
KZ 1540 ? :? "ENTER LOW VALUE FOR SCALE."
   :? "(0-";YMIN;") 0██";
YS 1550 ? "0█";:LOW=0:TRAP 1570:INPUT LOW
   :IF LOW<0 OR LOW>YMIN THEN 1540
ZL 1560 REM CALCULATE SCALE
HZ 1570 HI=YMAX-LOW
NW 1580 POWER=0
QP 1590 IF HI>=100 THEN HI=HI/10:POWER=PO
   WER+1:GOTO 1590
HN 1600 IF HI<10 THEN HI=HI*10:POWER=POWE
   R-1:GOTO 1600
TY 1610 HI=INT(HI+0.99)
PE 1620 IF HI/12=INT(HI/12) THEN DIV=12:G
   OTO 1660
JT 1630 IF HI/10=INT(HI/10) THEN DIV=10:G
   OTO 1660
FB 1640 IF HI/8=INT(HI/8) THEN DIV=8:GOTO
    1660
ZF 1650 HI=HI+1:GOTO 1620
EM 1660 IF POWER>0 THEN FOR A=1 TO POWER:
   HI=HI*10:NEXT A
OY 1670 IF POWER<0 THEN FOR A=POWER TO -1
   :HI=HI/10:NEXT A
TR 1680 SCALE=144/HI
NV 1690 HI=HI+LOW
NZ 1700 ? :? "TOP VALUE FOR SCALE = ";HI;
   ".":? "IS THIS OK (Y/N)?";
KQ 1710 GOSUB 1280:IF A THEN 1760
GS 1720 TRAP 1720:? :? "WHAT TOP VALUE DO
    YOU WANT (GREATER   THAN ";YMAX;")";:
   INPUT HI
NF 1730 IF HI<YMAX OR HI>900000 THEN 1720
TT 1740 HI=HI-LOW:GOTO 1580
SE 1750 REM CALCULATE POINTS ON SCREEN
MW 1760 ? :? "CALCULATING POINTS...":PTS=
   PTS(1):FOR A=1 TO PTS:FOR B=1 TO FILES

XA 1770 A(A)=INT(245/PTS*(A-0.5)+65):A(A)
   =INT(A(A)/2)*2:B(A,B-1)=INT(155.5-(Y(A
   ,B-1)-LOW)*SCALE)
EO 1780 NEXT B:NEXT A:RETURN
XV 1790 REM SET LABELS
GD 1800 ? CL$:? "SET LABELS:  (";PTS;" DA
   TA POINTS)"
HT 1810 ? :? "ENTER A TITLE FOR THE GRAPH
   .":INPUT TL$
IJ 1820 ? :? "ENTER THE Y-AXIS LABEL.":IN
   PUT YL$
MP 1830 IF FILES=1 THEN 1890
MK 1840 ? :? "ENTER THE LABELS FOR THE FI
   LES.":? "(8 LETTERS MAX)"
RS 1850 ? :K$=" ":K$(24)=" ":K$(2)=K$:G$(
   37)=" "
NY 1860 FOR A=1 TO FILES:? "FILE ";A;" ("
   ;G$(A*12-11,A*12);") ";
VM 1870 INPUT A$:IF A$<>"" THEN K$(A*8-7)
   =A$
QQ 1880 NEXT A:K$(25)=" "
YF 1890 ? :? "LABEL X-AXIS WITH (K)-CUSTO
   M LABELS,  (L)ETTERS, (M)ONTHS, (N)UMB
   ERS, OR    N(O) LABEL?";
HV 1900 POKE 702,64:GET #1,XLABEL:XLABEL=
   XLABEL-74:IF XLABEL<1 OR XLABEL>5 THEN
    1900
EX 1910 ? CHR$(XLABEL+74):IF XLABEL<5 THE
   N ON XLABEL GOSUB 1310,1440,1460,1490
AX 1920 RETURN
XA 1930 POKE 710,12:POKE 712,12:POKE 709,
   2:POKE 77,0
IY 1940 IF BRK THEN POKE 16,112:POKE 5377
   4,112
BG 1950 RETURN
DH 1960 GRAPHICS 8+16+16:GOSUB 1930:POKE
   712,64:POKE 752,1:? "███          *** PR
   INTER OFFLINE ***██"
NZ 1970 FOR X=1 TO 90:NEXT X:GRAPHICS 8+1
   6+32:GOSUB 1930:GOTO 630
```

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complete personal finance type-in software

BUDGET dB

Article on page 11

LISTING 1

Don't type the TYPO II Codes!

```
UP 2 REM BUDGET-DB
YL 4 REM BY J. ROGER KEARNEY
FU 6 REM (c) 1986, ANTIC PUBLISHING
JE 10 GOTO 5000
DI 20 TRAP 20:POKE N82,N6:? "██████ Enter
   trans":? "██ List trans":? "██ List bu
   dget/actual"
NC 30 ? "██ List misc info":? "██ Reconci
   le chkbk":? "██ Reconcile charge acct"
```

continued on next page

```
   :? "8 Set up data"
HW 40 ? "8 Save on DISK":? "9 Quit":POKE N82,N0:? :GOSUB 500
IE 50 R=N0:INPUT N:ON N GOTO 1100,150,1000,1500,730,700,2000,1900,5300
WQ 150 YI$="":PCNT=N0:NCNT=N0:? "LIST":? "  1 Cleared checks":? "  2 Uncleared checks"
XH 160 ? "  3 All checks":? "  4 Cleared charges":? "  5 Uncleared charges":? "  6 All charges"
OV 165 ? "  7 Cash purchases"
SV 170 ? "  8 Selected from all":? "9 All",,:INPUT L:? "":IF L>N9 OR L<N1 THEN 20
GF 180 IF L=N9 THEN STA$="N":Y$="":L=N8:GOTO 230
ZP 190 ? "Payee(or 'RETURN')";:INPUT Y$:? "Taxed items only('Y')";:INPUT STA$:IF STA$="" THEN STA$="N"
VH 200 ? C$;:INPUT YI$
AJ 210 ? SM$;:TRAP 230:INPUT SMO:? "End=";:INPUT EMO:IF EMO<SMO OR EMO>N12 OR SMO>N12 THEN 210
PK 220 GOTO 235
HF 230 SMO=N1:EMO=N12
CR 235 ? "Printer('Y')";:INPUT PR$:IF PR$="" THEN PR$="N"
LN 237 IF PR$="Y" THEN TRAP 4000:OPEN #N4,N8,N0,"P:"
XQ 240 ? "";PW$:POSITION N0,N1:IF TCNT=N0 THEN 455
XA 250 FOR N=2049 TO DSIZE STEP N21:TR=ASC(CT$(N+N15)):IF ASC(CT$(N,N))<SMO OR ASC(CT$(N,N))>EMO THEN 450
KX 260 IF LEN(YI$)=N1 THEN IF YI$<>CT$(N+N14,N+N14) THEN 450
SA 270 IF NCNT>=TCNT THEN 450
MI 280 IF L=N6 AND (TR=N4 OR TR=N5) THEN 320
LO 290 IF L=N3 AND (TR<N4 OR TR=N6) THEN 320
CT 293 IF L=N2 AND TR=N3 THEN 320
IR 295 IF L=N1 AND (TR=N0 OR TR=N6) THEN 320
NY 300 IF L<>N6 AND L<>N3 AND (L=TR OR L=N8) THEN 320
OR 310 GOTO 450
YF 320 IF STA$="Y" AND ASC(CT$(N+N18))=N0 AND ASC(CT$(N+N19))=N0 AND ASC(CT$(N+N20))=N0 THEN 450
HB 325 PL$(N1)=BL$:FOR J=N1 TO N4:PL$(LEN(PL$)+N1)=PL$:NEXT J
YU 330 PL$(N11,N18)=CT$(N+N6,N+N13)
EA 340 IF LEN(Y$)>N0 THEN IF Y$<>PL$(N11,N10+LEN(Y$)) THEN 450
KA 350 PL$(N2,N3)=STR$(ASC(CT$(N,N))):PL$(N5,N6)=STR$(ASC(CT$(N+N1,N+N1))):PL$(N8,N9)=STR$(ASC(CT$(N+N2,N+N2)))
TU 355 PL$(N4,N4)=S$:PL$(N7,N7)=S$:X=ASC(CT$(N+N3))*55+ASC(CT$(N+N4))*T56+ASC(CT$(N+N5))
DR 360 GOSUB 1600:PL$(N21)=P$:IF TR=N0 THEN PL$(30)="Sv chg"
DC 370 IF TR=N3 OR TR=N6 THEN PL$(30)="Deposit":PL$(66)=NC$:GOTO 430
TX 380 IF TR=N7 THEN PL$(30)="Cash"
JF 390 IF TR=N1 OR TR=N2 THEN PL$(30)=CN$:PL$(36)=STR$(ASC(CT$(N+N16))*T56+ASC(CT$(N+N17)))
BD 400 M=ASC(CT$(N+N14)):IF TR=N4 OR TR=N5 THEN PL$(30)="Chg ":PL$(34,34)=CT$(N+N17)
JB 410 PL$(44)=CHR$(M):IF M<>N64 THEN PL$(45)="-":PL$(46,51)=CT$(N6*(M-N64)+N1,N6*(M-N64)+N6):IF TR=0 THEN 430
MX 420 PL$(53)=" TAX=$":X=(ASC(CT$(N+N18))*55+ASC(CT$(N+N19))*T56+ASC(CT$(N+N20))):GOSUB 1600:PL$(58)=P$
QJ 425 IF TR=N2 OR TR=N5 THEN PL$(66)=NC$
CE 430 ? PL$:IF PR$="Y" THEN ? #N4;PL$
MS 440 PCNT=PCNT+N1
XQ 445 IF PCNT/N10-INT(PCNT/N10)=N0 THEN ? "'C' to cont";:INPUT STM$:POSITION N0,22:IF STM$<>"C" THEN 460
PW 450 IF NCNT<TCNT-N1 THEN NCNT=NCNT+N1:NEXT N
JD 455 ? "Found ";PCNT:GOSUB 1650
RX 460 CLOSE #N4:GOTO 20
EY 500 POKE 77,0:IF BRK THEN POKE N16,112:POKE 53774,112
ZD 510 RETURN
MN 700 R=N:GOSUB 1800:? C$;:INPUT YI$:IF LEN(YI$)=N1 THEN M=ASC(YI$):IF M<91 AND M>64 THEN 730
NW 710 GOTO 700
BC 730 ? "":TOT=N0
SC 740 ? PW$:FOR J=2049 TO 2049+TCNT*N21 STEP N21:TR=ASC(CT$(J+N15)):IF N=5 THEN IF TR=N2 OR TR=N3 THEN 770
KP 750 IF R=N6 AND TR=N5 AND M=ASC(CT$(J+N17)) THEN 770
PL 760 GOTO 910
EP 770 ? "";STR$(ASC(CT$(J,J)));S$;STR$(ASC(CT$(J+N1,J+N1)));S$;STR$(ASC(CT$(J+N2,J+N2)));BL$(N1,N2);
DY 775 ? CT$(J+N6,J+N13);BL$(N1,N2);
QR 780 X=(ASC(CT$(J+N3))*55+ASC(CT$(J+N4))*T56+ASC(CT$(J+N5))):GOSUB 1600:? P$;BL$(N1,N2);
FC 790 IF TR=N3 THEN X=-X:? "Deposit"
GW 800 IF TR=N2 THEN ? CN$;ASC(CT$(J+N16))*T56+ASC(CT$(J+N17))
ES 810 IF TR=N5 THEN ? "Chg ";CT$(J+N17,J+N17)
VQ 820 IF TR=N3 THEN ? :GOTO 850
XV 825 CT=ASC(CT$(J+N14))
CS 830 ? BL$(N1,N3);CHR$(CT);:IF CT<>N64 THEN ? "-";CT$(N6*(CT-N64)+N1,N6*(CT-N64)+N6);BL$(N1,N2);
ZD 840 ? " TAX=$";(ASC(CT$(J+N18))*55+ASC(CT$(J+N19))*T56+ASC(CT$(J+N20)))/C
SX 850 TRAP 900:? "Enter 'Y' if cleared('M'=MENU)";:INPUT YI$:IF YI$="M" THEN 20
GJ 860 IF YI$<>"Y" THEN 900
TU 870 IF TR=N3 THEN TR=N6
MA 880 IF TR=N2 OR TR=N5 THEN TR=TR-N1
PL 890 CT$(J+N15,J+N15)=CHR$(TR):GOTO 910
CY 900 TOT=TOT+X/C
CH 910 IF J<LEN(CT$)-N21 THEN NEXT J
GZ 920 X=TOT*C:GOSUB 1600:? "Outstanding=$";P$
DZ 930 IF N=N5 THEN ? :? B$;CHKBAL:? "Statement ";B$;CHKBAL+TOT
IN 940 GOSUB 1650:GOTO 20
SD 1000 TRAP 1000:A=177:? "";SM$;:INPUT STM$
TF 1005 IF STM$="" THEN STM$=STR$(MO):IF MO>N1 THEN STM$=STR$(MO-N1)
BI 1010 STM=VAL(STM$)-N1:IF STM<N0 OR STM>N11 THEN 1000
NL 1020 IF STM=N11 THEN STM=N10
IE 1030 ? C$;:INPUT STA$:IF STA$="" THEN STA$="A"
DH 1035 IF STA$<"A" OR STA$>"Z" THEN 1030
UM 1038 STA=ASC(STA$)-N65:AL=N20:IF STA+AL>N25 THEN AL=N25-STA
KQ 1040 POKE N752,N1:? "":POSITION N10,N0:FOR N=N0 TO N1
HG 1045 ? "  BDGT_";Z$((STM+N)*N3+N1,(STM+N)*N3+N3);"_ACTL";:NEXT N
BD 1050 FOR N=STA TO STA+AL:? CHR$(N+N65);"-";CT$(N*N6+N7,N*N6+N12);
GE 1060 FOR L1=N0 TO N11 STEP N3:R=A+L1+STM*N6+N*72:X=(ASC(CT$(R)))*55+(ASC(CT$(R+N1)))*T56+ASC(CT$(R+N2))
DA 1070 GOSUB 1600:? BL$(N1,N8-LEN(P$));:? P$;:NEXT L1:NEXT N
WW 1080 IF STA<N5 THEN ? "'C' to cont";:INPUT STA$:IF STA$="C" THEN STA=STA+N21:AL=N25-STA:GOTO 1040
DC 1090 GOSUB 1650
QY 1095 GOTO 20
PJ 1100 IF TCNT=MCNT THEN ? "NO MORE SPACE":GOSUB 1650
PD 1105 TRAP 20:GOSUB 1800:AO=TCNT*N21+2049
CA 1110 CT$(AO,AO)=CHR$(N0):CT$(AO+N20,AO+N20)=CHR$(N0):CT$(AO+N1)=CT$(AO)
MJ 1120 ? :POKE N82,N7:X=CHKBAL*C:GOSUB 1600:? B$;P$,MM$:? "1 ";CN$;NXTCHK,"4 Cash"
SL 1130 ? "2 ";CN$,,"5 Deposit":? "3 Charge",,"6 Sv chg":POKE 82,N0
```

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CE 1140 INPUT N:ON N GOTO 1200,1200,1150,
   1170,1180,1190
NQ 1150 TR=N5:? "Chg account ";C$;:INPUT
   Y$:IF ASC(Y$)<N65 OR ASC(Y$)>N90 THEN
   ? "INVALID":GOTO 1150
HH 1160 B=A0+N17:CT$(B,B)=Y$:GOTO 1220
NJ 1170 TR=N7:GOTO 1220
MR 1180 TR=N3:GOTO 1230
KX 1190 TR=N0:GOTO 1220
UG 1200 B=A0+N16:TR=N2:Y$=STR$(NXTCHK):NX
   TC=N1:IF N=N2 THEN NXTC=N0:? CN$;:INPU
   T Y$
DU 1210 CT$(B,B)=CHR$(INT((VAL(Y$))/T56))
   :B=A0+N17:CT$(B,B)=CHR$(((VAL(Y$))/T56
   -INT((VAL(Y$))/T56))*T56)
RX 1220 ? C$;:INPUT Y$:IF ASC(Y$(N1,N1))<
   N64 OR ASC(Y$(N1,N1))>N90 THEN 1220
MK 1230 B=A0+N15:CT$(B,B)=CHR$(TR)
NE 1240 IF TR<>N3 THEN CT$(A0+N14,A0+N14)
   =Y$(N1,N1)
FS 1250 ? "Date";:INPUT YI$:IF YI$="" THE
   N CT$(A0,A0)=CHR$(MO):CT$(A0+N1,A0+N1)
   =CHR$(DA)
QX 1255 IF YI$="" THEN CT$(A0,A0)=CHR$(MO
   ):CT$(A0+N1,A0+N1)=CHR$(DA):CT$(A0+N2,
   A0+N2)=CHR$(YR):GOTO 1270
YD 1260 GOSUB 1700:CT$(A0,A0)=CHR$(VAL(Y$
   (N1,N2))):CT$(A0+N1,A0+N1)=CHR$(VAL(Y$
   (N4,N5)))
KJ 1265 CT$(A0+N2,A0+N2)=CHR$(VAL(Y$(N7,N
   8)))
BQ 1270 TRAP 1270:? "Amount";:INPUT N:NA=
   N*C/55:B=A0+N3:CT$(B,B)=CHR$(INT(NA)):
   NA=(NA-INT(NA))*T56
SS 1275 IF TR=N3 THEN N=-N
VE 1280 CT$(A0+N4,A0+N4)=CHR$(INT(NA)):CT
   $(A0+N5,A0+N5)=CHR$((NA-INT(NA))*T56)
US 1285 IF TR=N0 OR TR=N3 THEN Y$="CHKACC
   NT":GOTO 1320
QI 1290 TRAP 1290:? "Tax";:INPUT TX:M=TX*
   C/55:CT$(A0+N18,A0+N18)=CHR$(INT(M))
JN 1295 M=(M-INT(M))*T56:CT$(A0+N19,A0+N1
   9)=CHR$(INT(M))
YW 1300 CT$(A0+N20,A0+N20)=CHR$((M-INT(M)
   )*T56)
DI 1310 TRAP 1310:? "Payee";:INPUT Y$:IF
   LEN(Y$)<N8 THEN Y$(LEN(Y$)+N1)=BL$
UP 1320 CT$(A0+N6,A0+N13)=Y$
MC 1330 ? "OK";:INPUT Y$:IF Y$(N1,N1)<>"Y
   " THEN 1100
WB 1340 IF TR=N3 THEN 1380
ER 1350 M=ASC(CT$(A0+N14))-N65:TAX=TAX+TX
   :NXTCHK=NXTCHK+NXTC:NXTC=N0:IF M=-N1 T
   HEN 1380
DP 1360 A1=180+72*M+(ASC(CT$(A0))-N1)*N6:
   A2=(ASC(CT$(A1))*55+(ASC(CT$(A1+N1)))*
   T56+ASC(CT$(A1+N2))+N*C)/55
MP 1370 CT$(A1,A1)=CHR$(INT(A2)):A2=(A2-I
   NT(A2))*T56:CT$(A1+N1,A1+N1)=CHR$(INT(
   A2))
HX 1375 CT$(A1+N2,A1+N2)=CHR$((A2-INT(A2)
   )*T56)
GO 1380 IF TR<N4 THEN CHKBAL=CHKBAL-N
QP 1410 TCNT=TCNT+N1:GOTO 1100
EE 1500 ? "■":X=TAX*C:GOSUB 1600:? "Sales
    tax=$";P$:? "Next ";CN$;NXTCHK,B$;:X=
   CHKBAL*C:GOSUB 1600:? P$
MT 1510 ? "#trans=";TCNT,"Room for ";MCNT
   -TCNT;" more":? :GOSUB 1650
PT 1520 GOTO 20
KZ 1600 IF X<N0 THEN NEG=N1:X=X*-N1
EX 1610 P$=STR$((X+0.1)/C):P$=P$(N1,LEN(P
   $)-N1):IF X=N0 THEN P$="0.00"
BE 1620 IF NEG THEN P$="-":P$(N2)=STR$((X
   +0.1)/C):P$=P$(N1,LEN(P$)-N1)
AQ 1630 NEG=N0:RETURN
NK 1650 POKE N752,N0:? :? MM$;:INPUT YI$
BD 1660 RETURN
KO 1700 Y$=YI$:IF LEN(YI$)=N6 AND YI$(N4,
   N4)=S$ THEN Y$(N1,N1)="0":Y$(N2,N3)=YI
   $(N1,N2):Y$(N4,N4)="0"
SG 1710 IF LEN(YI$)=N6 AND YI$(N4,N4)=S$
   THEN Y$(N5,N5)=YI$(N3,N3):Y$(N6,N8)=YI
   $(N4,N6)
LH 1720 IF LEN(YI$)=N7 AND YI$(N3,N3)=S$
   THEN Y$(N1,N3)=YI$(N1,N3):Y$(N4,N4)="0
   ":Y$(N5,N8)=YI$(N4,N7)
FH 1730 IF LEN(YI$)=N7 AND YI$(N2,N2)=S$
   THEN Y$(N1,N1)="0":Y$(N2,N8)=YI$(N1,N7
   )
AZ 1740 RETURN
OO 1800 POKE N752,N1:? "■":FOR N=N0 TO N8
   :ND=N*N6:POSITION N0,N:? CHR$(N+N64);"
   -";CT$(ND+N1,ND+N6)
XR 1810 POSITION N16,N:? CHR$(N+73);"-";C
   T$(ND+55,ND+60):POSITION 30,N:? CHR$(N
   +82);"-";CT$(ND+109,ND+114)
JM 1820 NEXT N:? :POKE N752,N0:RETURN
KB 1900 B=TAX*C/55:CT$(171,171)=CHR$(INT(
   B)):B=(B-INT(B))*T56:CT$(172,172)=CHR$
   (INT(B))
QD 1905 CT$(173,173)=CHR$((B-INT(B))*T56)
ZP 1910 CT$(169,169)=CHR$(INT(NXTCHK/T56)
   ):CT$(170,170)=CHR$((NXTCHK/T56-INT(NX
   TCHK/T56))*T56)
LX 1920 CT$(166,166)=CHR$(MO):CT$(167,167
   )=CHR$(DA):CT$(168,168)=CHR$(YR):CT$(1
   63,163)=CHR$(INT(TCNT/T56))
AC 1930 CT$(164,164)=CHR$((TCNT/T56-INT(T
   CNT/T56))*T56):CT$(165,165)=CHR$(NXTRC
   ):B=CHKBAL*C/55:R=174
ET 1940 CT$(R,R)=CHR$(INT(B)):B=(B-INT(B)
   )*T56:CT$(175,175)=CHR$(INT(B)):CT$(17
   6,176)=CHR$((B-INT(B))*T56)
JB 1950 ? "Sure('Y')";:INPUT Y$:IF Y$=""
   THEN 20
CH 1960 IF Y$<>"Y" THEN 20
ND 1970 TRAP 4000:CLOSE #N1:OPEN #N1,N8,N
   0,"D:BDGTDISK.DAT"
AD 1980 IO=848:POKE IO+N2,N11:N=ADR(CT$)/
   T56:POKE IO+N4,(N-INT(N))*T56:POKE IO+
   N5,INT(N):N=LEN(CT$)/T56
JI 1990 POKE IO+N8,(N-INT(N))*T56:POKE IO
   +N9,INT(N):JNK=USR(ADR("hhh▪LV▪"),16):
   CLOSE #1:GOTO 20
RC 2000 ? "■":? MM$:POKE N82,N6:? :? "1 S
   et budget"
FK 2010 ? "▪2 Set ";CN$:? "▪3 Name ";C$:?
    "▪4 Set ";B$:? "▪5 Clear all data.▪"
CG 2020 INPUT N:POKE N82,N0:ON N GOTO 208
   0,2170,2180,2240,2260
MP 2080 TRAP 2080:? "■":? C$:INPUT YI$:IF
    YI$="" THEN 2250
IM 2090 IF ASC(YI$(N1,N1))<N64 OR ASC(YI$
   (N1,N1))>N90 THEN 2080
VQ 2100 ? "MONTH(A=ALL)":INPUT STM$:IF ST
   M$="A" THEN 2120
FG 2110 STM=VAL(STM$)-N1:IF STM<N0 OR STM
   >N11 THEN 2100
DP 2120 ? "AMOUNT":INPUT N:N=N*C/55:A1=17
   7+72*(ASC(YI$(N1,N1))-N65)
EX 2130 IF STM$="A" THEN FOR STM=N0 TO N1
   1
LL 2140 R=A1+STM*N6:CT$(R,R)=CHR$(INT(N))
   :M=(N-INT(N))*T56:CT$(R+N1,R+N1)=CHR$(
   INT(M))
BS 2150 CT$(R+N2,R+N2)=CHR$((M-INT(M))*T5
   6):IF STM$="A" THEN NEXT STM
RU 2160 GOTO 2080
QG 2170 TRAP 2170:? "Enter next ";CN$:INP
   UT NXTCHK:GOTO 2250
EP 2180 GOSUB 1800:? C$;",e.g.'A-AUTOMO'"
   :INPUT YI$:IF YI$="" THEN 2250
MQ 2190 IF YI$(N2,N2)<>"-" OR YI$(N1,N1)<
   "@" OR YI$(N1,N1)>"Z" THEN 2180
EL 2200 IF LEN(YI$)<N8 THEN YI$(LEN(YI$)+
   N1,N8)=BL$
UE 2210 PA=N1+(ASC(YI$)-N64)*N6:CT$(PA,PA
   +N5)=YI$(N3)
RZ 2230 GOTO 2180
CN 2240 TRAP 2240:? "Bal=";:INPUT CHKBAL
PX 2250 GOTO 20
YE 2260 CT$(163)=CHR$(N0):CT$(2048)=CHR$(
   N0):CT$(164)=CT$(163):TCNT=N0:GOTO 20
MA 4000 TRAP 4000:ERR=PEEK(195):IF ERR<>1
   70 THEN 4050
GO 4010 ? "▪▪Input file D:BDGTDATA.DAT":?
    "is not on this disk.▪▪":? "Shall I c
   reate an empty one Y▪▪";
YZ 4020 INPUT STA$:IF STA$<>"Y" THEN GRAP
   HICS N0:END
HJ 4030 CT$(N1)=" ":CT$(162)=" ":CT$(N2)=
   CT$:CT$(163)=CHR$(N0):CT$(2048)=CHR$(N
   0):CT$(164)=CT$(163)
SU 4040 GOTO 5170
TP 4050 ? "Error # ";ERR:IF LEN(CT$)<2048
```

continued on next page

```
    THEN GRAPHICS N0:END
IL 4060 GOSUB 1650:GOTO 20
AF 5000 CLR :N1=1:N0=0:N2=N1+N1:N3=N1+N2:
   N4=N2+N2:N5=N4+N1:N6=N3+N3:N7=N4+N3:N8
   =N4+N4:N9=N4+N5:N10=N5+N5
XK 5005 BRK=N1:IF PEEK(53279)=N5 THEN BRK
   =N0
BC 5010 N11=N5+N6:N12=N7+N5:N13=N9+N4:N14
   =N9+N5:N15=N7+N8:N16=N8+N8:N17=N9+N8:N
   18=N9+N9:N19=N9+10:N20=N4*N5
EI 5020 N21=N7*N3:N25=N5*N5:N33=N11*N3:N6
   4=N8*N8:N65=N64+N1:N78=N65+N13:N82=N78
   +N4:N90=N10*N9:C=N10*N10
JY 5030 T56=N64*N4:N752=752:T53=53279:55=
   T56*T56:GRAPHICS N18
VY 5040 POSITION N5,N3:? #N6;"BUDGET-DB":
   POSITION N8,N5:? #N6;"BY":POSITION N4,
   N7:? #N6;"J.R.KEARNEY"
YN 5050 DIM Y$(N8),Z$(36),P$(N9),STA$(N1)
   ,STM$(N2),BL$(N7),YI$(N8),S$(N1),NC$(N
   12),PW$(N11),PL$(77)
AV 5060 DIM B$(N9),C$(N8),CN$(N6),MM$(N16
   ),SM$(N12),PR$(N1):S$="/":BL$="
   "
QH 5070 Z$="JANFEBMARAPRMAYJUNJULAUGSEPOC
   TNOVDEC":PW$="PLEASE WAIT":NC$=" NOT C
   LEARED":C$="Category"
OJ 5080 B$="Balance=$":CN$="check#":MM$="
   RETURN=main menu":SM$="Start month=":Y
   =N0
ZL 5100 DSIZE=FRE(N0)-1096:IF DSIZE>32766
    THEN DSIZE=32767
SY 5120 MCNT=INT((DSIZE-2048)/N21):DIM CT
   $(DSIZE):CT$(DSIZE)="0":TRAP 4000
CE 5130 OPEN #N1,N4,N0,"D:BDGTDISK.DAT":I
   O=848:POKE IO+N2,N7:N=ADR(CT$)/T56:POK
   E IO+4,(N-INT(N))*T56
HC 5135 POKE IO+N5,INT(N)
AS 5140 POKE IO+N8,N0:POKE IO+N9,255:JNK=
   USR(ADR("hhh[illegible]LV[illegible]"),16):CLOSE #1
NM 5150 CT$=CT$(N1,PEEK(IO+N8)+PEEK(IO+N9
   )*T56)
FE 5170 CHKBAL=(ASC(CT$(174))*55+ASC(CT$(
   175))*T56+ASC(CT$(176)))/C
AA 5180 TCNT=ASC(CT$(163))*T56+ASC(CT$(16
   4)):NXTRC=ASC(CT$(165)):NXTCHK=ASC(CT$
   (169))*T56+ASC(CT$(170))
XS 5190 TAX=(ASC(CT$(171))*55+ASC(CT$(172
   ))*T56+ASC(CT$(173)))/C
YV 5200 MO=ASC(CT$(166)):DA=ASC(CT$(167))
   :YR=ASC(CT$(168))
UW 5220 GRAPHICS N0:GOSUB 500:POKE 710,51
   :POKE 712,51:? "LAST DATE RUN=";MO;S$;
   DA;S$;YR:? "TODAY'S DATE";
AU 5230 TRAP 5220:INPUT YI$:IF LEN(YI$)<N
   6 OR LEN(YI$)>N8 THEN ? "[illegible]FORMAT='MO/D
   A/YR'[illegible]":GOTO 5220
WR 5240 GOSUB 1700:YI$(N1,N1)=CHR$(VAL(Y$
   (N1,N2))):MO=VAL(Y$(N1,N2)):DA=VAL(Y$(
   N4,N5)):YR=VAL(Y$(N7,N8))
CM 5250 CT$(166,166)=CHR$(MO):CT$(167,167
   )=CHR$(DA):CT$(168,168)=CHR$(YR)
QD 5260 GOTO 20
NU 5300 ? "Sure";:INPUT Y$:IF Y$="" THEN
   20
DC 5310 IF Y$="Y" THEN POKE 82,2:GRAPHICS
    N0:END
PT 5320 GOTO 20
```

"fail-safe" keyboarding for TYPO II

AUTO TYPO

Article on page 37

LISTING 1

Don't type the TYPO II Codes!

```
NT 32000 REM AUTOTYPO V. 2.06
YE 32001 REM BY BRIAN SANDFORD
ZJ 32003 REM (TYPO II BY ANDY BARTON,
LZ 32004 REM TURBO TYPO BY J.D. McLAUGHLI
   N)
UD 32010 REM (c) 1986, ANTIC PUBLISHING
CJ 32015 POKE 775,0:IF PEEK(53279)=5 THEN
    POKE 775,34
QI 32020 CLR :DIM LINE$(120),IN$(2),OUT$(
   2):CLOSE #2:CLOSE #3:CLOSE #4
JE 32025 SCR=PEEK(775):DIM B$(75)
ZS 32026 B$="[illegible]"
WZ 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E":
   OPEN #4,4,0,"K"
MZ 32035 STM=PEEK(136)+PEEK(137)*256:IN$=
   ""
WT 32040 ? "[illegible]":POSITION 2,0:? "AUTOTYPO"
PB 32050 TRAP 32040:REV=0:POKE 710,148:PO
   SITION 11,0:? "^=CONTROL ?=upper case
   alpha"
MA 32055 ? "[^B] BASIC  [^L] LIST  [^R]
    REVIEW "
CI 32060 ? "CODE[??],line#,prgm line
     -ENTER"
FR 32065 ? "CODE[*] ,line#,[RTN]      -ENT
   ER/-EDIT"
FZ 32068 ? "CODE[*] ,[RTN]          -EDIT L
   AST LINE"
YB 32070 ? "CODE[??],line#
    -DELETE"
OM 32080 ? "CODE[RTN],line#
    -DELETE"
OS 32090 POSITION 2,16:? "Entered CODE ";
   IN$;" for LAST LINE ";B:POSITION 2,7
SI 32100 POKE 559,34:POKE 82,0:? :GOSUB 3
   2280:POKE 82,2:?
KQ 32110 INPUT #2;LINE$:IF LINE$="" THEN
   32270
UJ 32120 IF IN$="[illegible]" THEN B=VAL(LINE$):GOT
   O 32270
JA 32130 POKE 559,SCR:POSITION 2,14:? "CO
   NT"
QI 32140 B=VAL(LINE$):POSITION 1,7:? " ";

OS 32150 POKE 842,13:STOP
DH 32160 POKE 842,12
RR 32170 ? "[illegible]":POSITION 2,0:? "AUTOTYPO":
   POSITION 2,18:LIST B:C=0:ANS=C
GH 32180 POSITION 2,19:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED "
   :GOTO 32050
ZL 32185 IF IN$="[illegible]" THEN D=LEN(STR$(B)):
   IF LEN(LINE$)>(D+6) THEN IF LINE$(D+2,
   D+6)="ERROR" THEN IN$="[illegible]":GOTO 32240
QN 32190 ANS=USR(ADR(B$),ADR(LINE$),LEN(L
   INE$)):ANS=PEEK(1789)+256*PEEK(1790)+6
   5536*PEEK(1791)
DZ 32200 CODE=ANS-(INT(ANS/676)*676):HCOD
   E=INT(CODE/26):LCODE=CODE-(HCODE*26)
BB 32210 OUT$=CHR$(HCODE+193):OUT$(2)=CHR
   $(LCODE+193)
EZ 32220 POSITION 0,19:? OUT$:IF IN$="[illegible]"
    THEN IN$=OUT$
DA 32225 IF REV THEN IN$=OUT$:GOTO 32380
```



```
MU 32230 IF OUT$=IN$ THEN 32050
VZ 32240 POKE 710,48:SOUND 0,75,12,10:FOR
    X=1 TO 40:NEXT X
ZC 32250 POSITION 2,17:? "THIS LINE HAS A
   N  ERROR ."
WE 32260 POSITION 2,6:? "Re-enter CODE an
   d RETURN to EDIT line":TRAP 32040:SOUN
   D 0,0,0,0:GOTO 32090
LO 32270 POSITION 2,8:LIST B:POSITION 1,9
   :? " ";:IF IN$="" THEN IN$=""
AU 32275 GOTO 32110
VD 32280 IN$="":L=0
ZD 32290 GET #4,A:IF A=155 AND L<>1 THEN
   RETURN
JR 32300 IF A=42 AND L=0 THEN 32340:REM *

OP 32310 IF A=2 THEN GRAPHICS 0:POKE 82,2
   :TRAP 40000:END :REM ^Basic
TC 32320 IF A=12 THEN ? "":POKE 82,2:GOT
   O 32360:REM ^List
GL 32325 IF A=18 THEN POKE 82,2:? "":POP
    :GOTO 32380:REM ^Review
WK 32330 IF A<65 OR A>90 THEN SOUND 0,121
   ,10,10:FOR X=1 TO 20:NEXT X:SOUND 0,0,
   0,0:GOTO 32290
BB 32340 L=L+1:IN$(L,L)=CHR$(A+128):? CHR
   $(A+128);:IF L=2 OR A=42 THEN RETURN
EU 32350 GOTO 32290
CA 32360 TRAP 40000:POSITION 2,9:? "ENTER
    list device (Xx:Filename.ext)"
UM 32370 INPUT LINE$:LIST LINE$,0,31999:L
   INE$="":GOTO 32020
BK 32380 TRAP 32035:POSITION 2,0:? " AUTO
   TYPO ":POSITION 8,2:? " REVIEW TYPO CO
   DES "
WH 32390 ? "  [ANY KEY] -CHECK Codes":? "
   [CTRL-D] -DONE, exit to AUTOTYPO"
FH 32400 POKE 710,192:IF REV THEN POSITIO
   N 2,16:? "   CODE ";IN$;" for line ";B

GX 32410 POSITION 2,7:? :REV=1:POKE 559,3
   4:GET #4,A:IF A=4 THEN 32035
RX 32420 B=PEEK(STM)+PEEK(STM+1)*256:IF B
   >31999 THEN 32035
QM 32430 DISP=PEEK(STM+2):STM=STM+DISP
YW 32440 POKE 559,SCR:POSITION 2,8:LIST B
   :POSITION 1,9:? " ";
SK 32450 INPUT #3;LINE$:GOTO 32130
```

LISTING 2

```
UP 10 REM CREATES LINE 32026
VW 20 REM FOR AUTOTYPO
FW 30 REM (c) 1985, ANTIC PUBLISHING
XM 35 REM (MAY ALSO BE USED TO CREATE LIN
   E 32025 FOR TYPO II DOUBLE FEATURE, AN
   TIC, NOV. '85)
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
OD 70 FN$="D:LINE.LST":REM THIS IS THE NA
   ME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")     "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? " COMPLETED
   "
JH 1000 DATA 82
CU 1010 DATA 051050004805005403206603606l0
   341690011332031041041332051041332041O4
   10413320716900014125300614l
EM 1020 DATA 254006141255006160000165203l
   332081772041332060241652061092530061 41
   2530061440112382540061 73254
MC 1030 DATA 006208003230255006198208208 2
   302002302031982072082150960341 55
```

lesson 8: DATA statements

NEW OWNERS COLUMN

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LISTING 1

Don't type the TYPO II Codes!

```
IA 10 REM THE NEW OWNER'S COLUMN, PART 7
PQ 20 REM BY DAVID PLOTKIN
GL 30 REM (c) 1986, ANTIC PUBLISHING
CO 50 GRAPHICS 0:DIM NAME$(20),TXT$(15),D
   UM$(30)
VQ 60 POSITION 4,9:PRINT "WHAT IS YOUR NA
   ME";:INPUT NAME$:REM THE INPUT STATEME
   NT
SO 70 POKE 752,1:POSITION 0,10:PRINT " ";

II 80 COLOR 42:PLOT 4,14:DRAWTO 36,14:DRA
   WTO 36,18:DRAWTO 4,18:DRAWTO 4,14:DRAW
   TO 4,16:DRAWTO 5,16
IZ 90 LN=6+LEN(NAME$):LQ=20-LN/2:DUM$="HE
   LLO ":DUM$(LEN(DUM$)+1)=NAME$
WZ 100 FOR LOOP=1 TO LN:POSITION LQ+LOOP-
   1,16:PRINT DUM$(LOOP,LOOP);
BA 110 FOR WAIT=10 TO 20:SOUND 0,WAIT*5,1
   0,4:NEXT WAIT:NEXT LOOP:SOUND 0,0,0,0
NV 120 POSITION 4,20:PRINT "PRESS RETURN
   TO CONTINUE"
PG 130 OPEN #1,4,0,"K:"
GM 140 GET #1,A:IF A<>155 THEN 140
HO 150 PRINT CHR$(125):POSITION 3,2
LP 160 PRINT "PRESS ANY KEY AND I WILL TE
   LL YOU      WHICH KEY YOU PRESSED"
IX 170 REM TEST FOR KEYS WHICH ARE CURSOR
    CONTROLS
JT 180 GET #1,A:TXT$=""
CK 190 IF A=27 THEN TXT$="ESC":GOTO 350
CC 200 IF A=127 THEN TXT$="TAB":GOTO 350
```

continued on next page

```
AC 210 IF A=159 THEN TXT$="SET":GOTO 350
PG 220 IF A=158 THEN TXT$="CLR":GOTO 350
KS 230 IF A=126 THEN TXT$="BACKSPACE":GOT
   O 350
FU 240 IF A=156 THEN TXT$="DELETE":GOTO 3
   50
VW 250 IF A=254 THEN TXT$="CTRL-DELETE":G
   OTO 350
QO 260 IF A=157 THEN TXT$="INSERT":GOTO 3
   50
MX 270 IF A=255 THEN TXT$="CNTRL-INSERT":
   GOTO 350
YI 280 IF A=125 THEN TXT$="CLEAR":GOTO 35
   0
AW 290 IF A=155 THEN TXT$="RETURN":GOTO 3
   50
UV 300 IF A=31 THEN TXT$(1,1)=CHR$(27):TX
   T$(2,2)=CHR$(31):GOTO 350
SL 310 IF A=30 THEN TXT$(1,1)=CHR$(27):TX
   T$(2,2)=CHR$(30):GOTO 350
JV 320 IF A=28 THEN TXT$(1,1)=CHR$(27):TX
   T$(2,2)=CHR$(28):GOTO 350
MJ 330 IF A=29 THEN TXT$(1,1)=CHR$(27):TX
   T$(2,2)=CHR$(29):GOTO 350
SB 340 TXT$=CHR$(A)
KW 350 PRINT "YOU PRESSED ";TXT$;" : CODE
   ";A
PE 360 GOTO 180
OG 370 END
```

ST RESOURCE

HANGMAN

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```
1000   '
1010   ' ST Classics: HANGMAN.BAS
1020   ' (c) 1986 Antic Publishing
1030   ' Ver. 032786
1040   ' Written by Paul Pratt and Stephen Everman
1050   '
1060   '------------------------------
1070   MAIN:
1080    gosub INITIALIZE
1090    '
1100    while not FINISHED
1110        gosub HANGMAN
1120    wend
1130   '
1140   end
1150   '
1160   '------------------------------
1170   HANGMAN:
1180    while PLAYING
1190        gemsys( GRAFMKSTATE )
1200        SPOT=( peek( GINTOUT+2 )\9 )
1210        PLACE=int( SPOT )
1220        MOUSE=peek( GINTOUT+6 )
1230        INRANGE=FALSE
1240        GOODPRESS=FALSE
1250        if PLACE>9 and PLACE <61 then INRANGE=TRUE
1260        if MOUSE=LEFTBUTTON and PLACE<>OLDPLACE then GOODPRESS=TRUE
1270        if INRANGE and GOODPRESS then gosub MAKEAGUESS
1280        if MOUSE=RIGHTBUTTON then PLAYING=FALSE: FINISHED=TRUE
1290    wend
1300   return
1310   '
1320   '------------------------------
1330   MAKEAGUESS:
1340    if PLACE mod 2<>0 or peek( GINTOUT+4 )<EOL then return
1350    OLDPLACE=PLACE
1360    color RED
1370    CH$=chr$( PLACE/2+60 )
1380    gotoxy PLACE, 15: print CH$;
```

```
1390    for LETTER=1 to WORDLENGTH
1400       if mid$( WORD$, LETTER, 1 )=CH$ then gosub CORRECT
1410    next LETTER
1420    if NUMRIGHT=WORDLENGTH then FLAGGED=TRUE: gosub RESTART: return
1430    if not FLAGGED then gosub BADGUESS
1440    if TRYS=0 then FLAGGED=FALSE: gosub RESTART: return
1450    FLAGGED=FALSE
1460   return
1470   '
1480   '---------------------------
1490   BADGUESS:
1500    sound 1, 10, 3, 4, 9
1510    sound 1, 0,  0, 0, 0
1520    TRYS=TRYS-1
1530    gotoxy 13, 7: print TRYS
1540   return
1550   '
1560   '---------------------------
1570   CORRECT:
1580    FLAGGED=TRUE
1590    gotoxy LETTER*2+32-WORDLENGTH, 12: print CH$;bell$
1600    NUMRIGHT=NUMRIGHT+1
1610   return
1620   '
1630   '----------------------------
1640   WORDGET:
1650    WORD=int( rnd( 1 )*183 )+1
1660    restore WORDSDATUM
1670    for INDEX=1 to WORD
1680       read WORD$
1690    next INDEX
1700    WORDLENGTH=len( WORD$ )
1710    for DASH=1 to WORDLENGTH*2 step 2
1720       gotoxy 33-WORDLENGTH+DASH, 12: print chr$( 95 );
1730    next DASH
1740    for DOT=1 to 26
1750       gotoxy DOT*2+8, 15: print chr$( (DOT+asc("A"))-1 );
1760    next DOT
1770   return
1780   '
1790   '---------------------------
1800   RESTART:
1810    COLOUR=MINCOLOUR
1820    for BOOPDING=1 to 12
1830       gotoxy 34-WORDLENGTH/2, 11
1840       print WORD$
1850       COLOUR=COLOUR+1
1860       if COLOUR=MAXCOLOUR then COLOUR=MINCOLOUR
1870       color COLOUR, BLACK, BLACK, SHADED, STIPLED
1880       if FLAGGED then print bell$
1890       if not FLAGGED then sound 1, 10, 3, 4, 9: sound 1, 0, 0, 0
1900       for DELAY=0 to 250: next DELAY
1910    next BOOPDING
1920    '
1930    color RED
1940    gotoxy 17,12: print "                                        "
1950    gotoxy 18,11: print "                                  "
1960    SCORE=SCORE+TRYS: if TRYS=0 then SCORE=SCORE-5
1970    if TRYS>10 then SCORE=SCORE+10
1980    NUMRIGHT=0: TRYS=12: FLAGGED=FALSE: WORD=WORD+1
1990    gotoxy 13,7: print TRYS
2000    gotoxy 56,7: print SCORE
2010    color BLACK
2020    PA=PA+6.75
2030    PAR=int( PA )
2040    gotoxy 41,7: print PAR
2050    gotoxy 28,7: print WORD
```

continued on next page

```
2060     gosub WORDGET
2070    return
2080     '
2090    '-------------------------------
2100    INITIALIZE:
2110     TRUE=(-1): FALSE=0: EOL=155: GRAFMKSTATE=79
2120     FINISHED=FALSE: PLAYING=TRUE
2130     WHITE=0: BLACK=1: RED=2: GREEN=3
2140     OUTPUT=2: BOILERPLATE=13: SHADED=1: STIPLED=2
2150     bell$=chr$( 7 )
2160     MINCOLOUR=1: MAXCOLOUR=4: LEFTBUTTON=1: RIGHTBUTTON=3
2170     fullw OUTPUT: clearw OUTPUT
2180     randomize 0
2190     color BLACK, RED, GREEN, BOILERPLATE, STIPLED
2200     A#=GB: TRYS=12: WORD=1
2210     gotoxy 8, 7: print "TRYS =";TRYS;"      WORD# =";WORD
2220     gotoxy 36,7: print "PAR =";PAR;"        SCORE =";SCORE
2230     '
2240     restore BOXDATUM
2250     for VECTOR=0 to 8
2260        read x1, y1, x2, y2: linef x1, y1, x2, y2
2270     next VECTOR
2280     '
2290     gosub WORDGET
2300     fill 0, 100: color BLACK
2310     gotoxy 22,1: print "H    A    N    G    M    A    N"
2320     gotoxy 18,3: print "* Remaining Trys Are Added To Score    *"
2330     gotoxy 18,4: print "* Not Getting Word Subtracts 5 Points *"
2340     gotoxy 18,5: print "* 0 or 1 Error Adds 10 BONUS Points.   *
2350     color GREEN, GREEN, GREEN, SHADED, STIPLED
2360     fill 60,10
2370     GINTOUT=peek( A#+12 )
2380    return
2390     '
2400    BOXDATUM:
2410     data 48,6,560,6,560,6,560,74,560,74,48,74,48,74,48,6
2420     data 150,88,450,88,450,88,450,124,450,124,150,124,150
2430     data 124,150,88,48,61,560,61
2440     '
2450    WORDSDATUM:
2460     data MOUSE,POWERSUPPLY,ATARI,BIRTHDAY,SCREAM,WELCOME,CARRIAGE
2470     data ESSENTIAL,TOWER,ADJOINING,APPRECIATE,PROCEDURES,DAMAGE,OFFICE
2480     data DISPATCH,HARSH,CONFIDENCE,DANGER,WEATHER,POLICY,PHONE,FLIGHT
2490     data PATTERN,EXACTLY,FLAMBOYANT,I,A,AS,TO,BE,AN,ON,OF,AT,WORSE,FLY
2500     data CLOCK,NATURAL,VISIT,ELBOW,BURDEN,DWINDEL,PORTRAIT,SIMPLY
2510     data DIVORCE,ELIGIBLE,ABRUPTLY,MAILBOX,SEVERAL,CHOKED
2520     data CHILD,REQUEST,SUPRISE,SEVERAL,SHADOW,CENTER,BEACON,EMPTY
2530     data UP,CHICKEN,DUCK,ROLL,ROAR,TOILET,ROVING,ACTUATE,INTERIOR,HARM
2540     data JOLT,VICTORY,EMPERIOR,AFTERNOON,APARTMENT,GUESS,BOARD
2550     data CONSIDERABLE,FIRECRACKER,OBSTRUCTION,TEMPORARY,INTENSELY,YOKE
2560     data ASHES,DIRTY,SEX,ICY,KILL,LID,LUMP,MOBLITY,MEGAPHONE,SENSIBLE
2570     data PERFORMANCE,DEMONSTRATION,STATEMENT,PORTABLE,DELEGATION,WORSE
2580     data OBJECT,OUTRAGE,SHOULDER,HUSBAND,BALLERINA,INFORMATION,POOR
2590     data APPROACH,DEVELOPMENT,UNDERSTAND,OBSESSION,CAMPAIGN,GLEAM,FULL
2600     data TERMINAL,EARNEST,DOUBT,ROOF,SOFTLY,PANIC
2610     data IRRATIONAL,CHAPTER,ZERO,WEENIE,ZONKERS
2620     data ENLIGHTEN,COUPLE,PECULIAR,SQUARE,CODE,YIELD,GARDEN
2630     data IGNORE,ABDOCATE,SILENT,NAKED,MURMUR,POISON,PERISH,HONEST
2640     data COMMENT,BALCONY,LIMOUSINE,COMMUNITY,TRANSPORTATION,INVOLVED
2650     data EFFECT,DYNAMITE,WRONG,OXYGEN,SKILL,LONELY,GUITAR,PLOT
2660     data PAUSE,PROPER,CHINA,STORY,BECAUSE,SWITCHBOARD,UNIMPEACHABLE
2670     data BLUNT,ANNOUNCING,PROBLEM,FACTORY,TOMORROW,ABDUCTION,CORNER
2680     data FELT,RIFLE,EMPTY,FIFTEEN,YAWN,JEWEL,GOLF,CONFIDENTLY,QUOTE
2690     data YACHT,LIBERTY,HABIT,DAZED,TRINKET,PUNGENT,CAPTIVE,SPRAWL
```

Checksum for file: hangman.bas

1000 :00F2	1280 :1026	1560 :05DF	1840 :045A	2120 :0882	2400 :0364
1010 :07FD	1290 :027A	1570 :0319	1850 :050F	2130 :0858	2410 :0B95
1020 :087A	1300 :0364	1580 :0435	1860 :0CE1	2140 :0C44	2420 :0BAD
1030 :0380	1310 :00EC	1590 :0F03	1870 :0BEB	2150 :04B1	2430 :06DD
1040 :0F29	1320 :0633	1600 :063C	1880 :0929	2160 :0F07	2440 :00F1
1050 :00ED	1330 :03E7	1610 :0368	1890 :0E3E	2170 :098E	2450 :040F
1060 :0607	1340 :0FE3	1620 :00F0	1900 :08CF	2180 :04C4	2460 :123E
1070 :0227	1350 :04AF	1630 :060A	1910 :04DC	2190 :0C8C	2470 :1360
1080 :05DB	1360 :03C4	1640 :0321	1920 :00F3	2200 :05FE	2480 :12F9
1090 :00F1	1370 :05C0	1650 :06C9	1930 :03C7	2210 :0D63	2490 :12E3
1100 :0676	1380 :08BE	1660 :06DB	1940 :071A	2220 :0D14	2500 :123A
1110 :04DD	1390 :0833	1670 :061A	1950 :071B	2230 :00EE	2510 :0FC6
1120 :0272	1400 :0DC9	1680 :03CB	1960 :0D90	2240 :0630	2520 :121F
1130 :00EC	1410 :0455	1690 :0407	1970 :0901	2250 :056B	2530 :135F
1140 :01FD	1420 :13AE	1700 :06F3	1980 :0CF0	2260 :0B06	2540 :1180
1150 :00EE	1430 :0AEF	1710 :09C9	1990 :07FD	2270 :045D	2550 :13E0
1160 :0608	1440 :0FF1	1720 :0DA1	2000 :081D	2280 :00F3	2560 :1314
1170 :02FD	1450 :045C	1730 :03AA	2010 :043F	2290 :0509	2570 :13D7
1180 :04F7	1460 :036B	1740 :04B3	2020 :031E	2300 :070F	2580 :12BA
1190 :06ED	1470 :00F3	1750 :0DD1	2030 :0412	2310 :08D6	2590 :1389
1200 :07A9	1480 :05E0	1760 :0374	2040 :0782	2320 :122D	2600 :0DAC
1210 :0548	1490 :0356	1770 :036F	2050 :07E1	2330 :1346	2610 :0D38
1220 :070C	1500 :04D1	1780 :00F7	2060 :0504	2340 :1075	2620 :103B
1230 :0472	1510 :0491	1790 :05E4	2070 :0369	2350 :0BAA	2630 :121E
1240 :0525	1520 :0407	1800 :0328	2080 :00F1	2360 :0365	2640 :1386
1250 :0BDE	1530 :07F3	1810 :0593	2090 :0692	2370 :061B	2650 :1167
1260 :119D	1540 :036A	1820 :0618	2100 :03EF	2380 :036D	2660 :12AA
1270 :0E3B	1550 :00F2	1830 :07F7	2110 :0B14	2390 :00F5	2670 :12FA
					2680 :12A2
					2690 :122A

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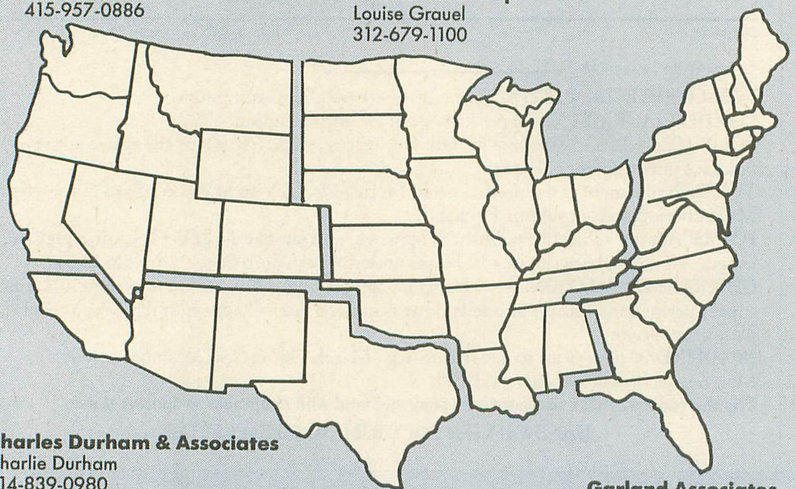
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The Variable Lister below is useful in keeping track of the variables you are using while writing a program. **Antic** came across this Variable Lister by Mark Brown in "Current Notes," the magazine of the National Capitol Atari Users Group.

Type in Variable Lister and LIST it to disk or cassette under an appropriate name. Type NEW and either ENTER or LOAD a BASIC program, or even type one in. When done, ENTER the program below from disk or cassette, and type in GOTO 32666 at the READY prompt. The program will automatically type out the names of all variables in your original program, and give you a count of them. Atari BASIC limits you to 128 variables in a program. A useful modification to this program would be to re-direct the output to a printer.

```
32666 ? CHR$(125):POKE 203,PEEK(130):POKE
204,PEEK(131):POKE 205,0:IF PEEK(PEEK(203)+256*
PEEK(204))=0 THEN 32761
32667 IF PEEK(PEEK(203)+256*PEEK(204))<128
THEN ? CHR$(PEEK(PEEK(203)+256*PEEK(204)));:
GOTO 32669
32668 ? CHR$(PEEK(PEEK(203)+256*PEEK(204))-128):
POKE 205,PEEK(205)+1
32669 POKE 203,((PEEK(203)+1)-256*(PEEK(203)=
255)):IF PEEK(203)=0 THEN POKE 204,PEEK(204)+1
32670 IF PEEK(PEEK(203)+256*PEEK(204))<>0
THEN 32667
32671 ? :? PEEK(205);" variables in use"
```

ARTMAKER FILENAMES

Richard Wood of Miami, Florida sent in the following modification to *Artmaker*, from the July, 1986 *Antic*. It allows you to select different filenames for your creations. Change line number 35 to 39 and add these lines:

```
34 DIM FN$(14):GRAPHICS 0:? "ARTMAKER"
35 ? "SELECT FILENAME TO SAVE SCREEN TO":FN$ =
"D:":? "D:";:CLOSE #1:OPEN #1,4,0,"K:"
36 GET #1,CHAR:IF CHAR=155 THEN 39
37 ? CHR$(CHAR);
38 FN$(LEN(FN$)+1)=CHR$(CHAR):GOTO 36
```

* Modify line # 90 to read:

```
90 CLOSE #1:OPEN #1,8,0,FN$
```

Wood also asks if anyone knows of a color screen dump that works with the Epson JX-80.

PROTECTION ROUTINE

Try the following as a simple protection scheme for your BASIC programs:

```
10 POKE 16,112:POKE 53774,112:REM DISABLE
BREAK KEY
20 POKE 580,1:REM   FORCE RE-BOOT ON RESET
( YOUR PROGRAM HERE )
32766 V1=PEEK(130)+256*PEEK(131):V2=PEEK(132)
+256*PEEK(133)
:FOR V1=V1 TO V2:POKE V1,155:NEXT V1
32767 V1=PEEK(138)+256*PEEK(139)+2:POKE V1,0:
SAVE "D:filename":NEW
```

The effect of these last two lines is to replace the variable table with all carriage returns. SAVE an unprotected master copy of your program on a separate disk before you RUN it. When you RUN it, the resultant file can be RUN, but not LOADED or LISTed! Your ingenious BASIC code is now protected from prying eyes, but your program can still be copied. Combine this with the hardware key from the August, 1986 **Antic** and you will now have a very well-protected program. A myriad of programming tricks like this are described in Ian Chadwick's *Mapping the Atari*, from Compute! Books.

If you have a Tech Tip that you would like to share with other readers, send it along to Antic Tech Tips, 524 Second Street, San Francisco, CA 94107. You might get your name in print. We always welcome very short programs that demonstrate the Atari's powers, simple hardware modifications, or useful macros for popular software.

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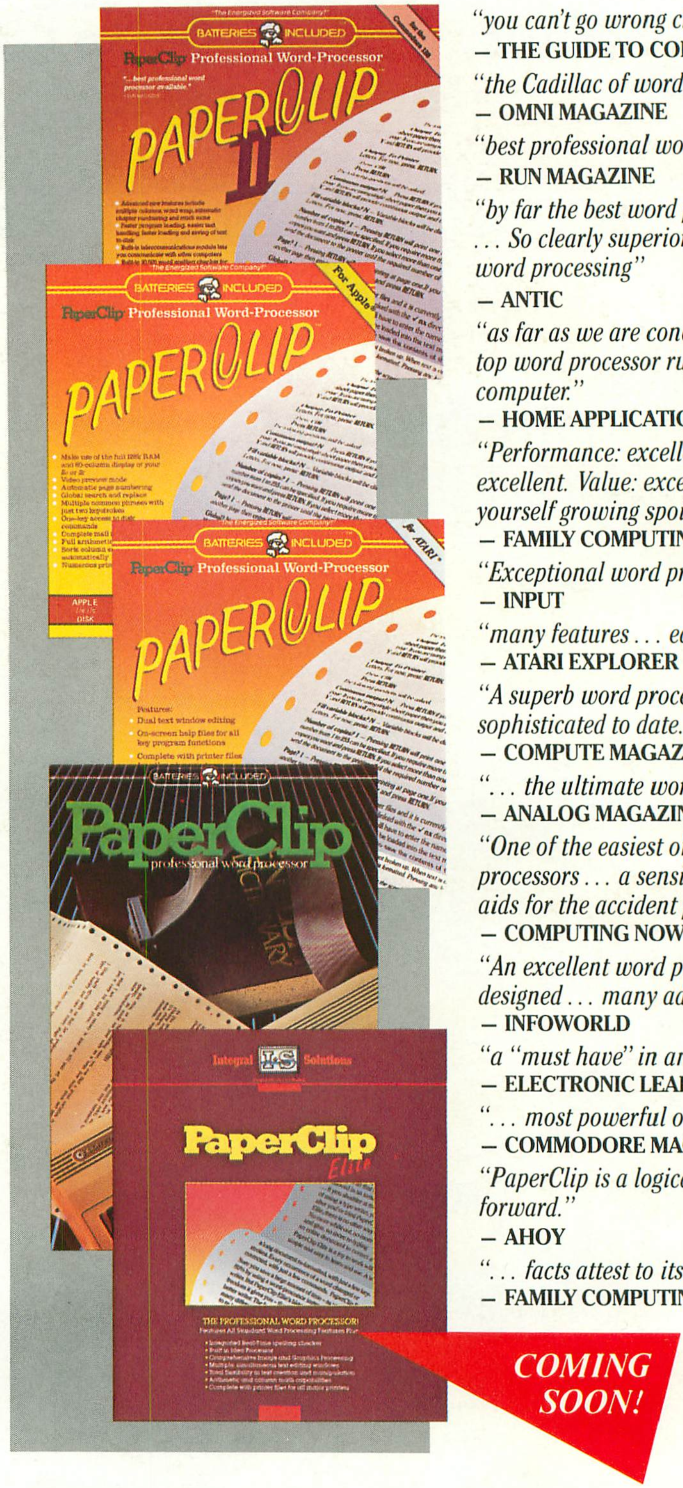
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